

# The New Mexico Botanist

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## Thomas K. Todsens Field Books — 1967-1981

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One of New Mexico's many exceptional amateur botanists was Thomas Kamp Todsens (1918-2010; see The New Mexico Botanist 53: 1-3, 2011.). A few years ago, two of his field books were given to me by his son, Andy, with the expectation that the information therein might be of interest to New Mexico botanists.

The first book, a 4 x 8 inch reporter-style notebook with top-coil binding, is titled on the front cover, "Botanizing Notebook, T.K. Todsens, 1968." The notebook is apparently missing one or more initial pages, but the second intact page has an unambiguous date of 16 September 1967. Recording ends slightly more than one year later on 28 September 1968. Notes are recorded on only one side of each page. This notebook will be referred to as FB67-68.

The second book is a 4.5 x 7.25 inch hard-cover Transit Book (the cover barely attached by a few threads) with 17 preliminary printed pages of "Improved Tables and Information." It is missing the first six pages of notes (snipped out of the notebook), and begins with notes from 15 September 1968, and ends on 26 July 1981. Notes are recorded on both sides of each page. This book will be referred to as FB68-81.

To help in searching localities, the pages of the field books are indexed by county (United States) or state (Mexico):

### FB67-68

#### Arizona

Cochise Co.: 23

#### New Mexico

Bernalillo Co.: 19

Dona Ana Co.: 2, 3, 4, 5, 6, 7, 9, 11, 12, 18

Grant Co.: 1, 13, 14, 17, 21

Hidalgo Co.: 2, 16

Lincoln Co.: 15, 20, 21

Los Alamos Co.: 19

Otero Co.: 14, 15

Sierra Co.: 3, 14, 17

Taos Co.: 19

#### Texas

El Paso Co.: 6

### FB68-81

#### Arizona

Cochise Co.: 16, 18, 48, 80, 83, 99

#### New Mexico

Catron Co.: 24, 44

Colfax Co.: 44

Dona Ana Co.: 1, 2, 4, 8, 10, 12, 14, 22, 24, 28, 30, 34, 36, 38, 40, 42, 46, 48, 50, 52, 62, 64, 68, 70, 72, 74, 76, 78, 86, 88, 89, 93, 94, 95, 96, 97, 100, 102

Grant Co.: 12, 14, 16, 26, 28, 38, 40, 42, 44, 50, 74, 81, 85

Guadalupe Co.: 44

Hidalgo Co.: 2, 6, 50, 52, 76, 87, 88, 100, 104

Lincoln Co.: 20, 22, 30, 50

Luna Co.: 60, 84

McKinley Co.: 32

Otero Co.: 16, 18, 20, 22, 26, 30, 34, 36, 48, 60, 62, 74, 141

San Juan Co.: 68

San Miguel Co.: 24, 26

Sierra Co.: 26, 28, 34, 42, 44, 46, 52, 64, 89, 98, 103, 105, 106, 107

Socorro Co.: 72, 78

Taos Co.: 48

Torrance Co.: 42

#### Utah

San Juan Co.: 32

#### Mexico

Sonora: 54, 58, 60

Each page of the field books that contained notes was scanned, and are reproduced on the following pages. A page number was added in the upper corner (left or right), to reference the list of counties.

*Botanice est Scientia Naturalis quae Vegetabilium cognitionem tradit.*

— Linnaeus





## BOTANIZING NOTEBOOK

T. K. TODSEN.

1968

FB67-68

1918-1919  
 1918-1919  
 1918-1919

3 7-8 Oct 67

IPOMOEA BARBATISEPALA (IN  
 FRUIT) AND SICYOSPERMA GRACILE  
 IN FLOWER AND FRUIT (IS THIS  
 REFERABLE TO SICYOS GLABER?)

24 Sep 67 - NE of Monticello - Tetradlea  
 Coulteri in bloom - Cowania in bloom

17 March 68 - Mouth of Soledad Canyon

Anemone ~~lept~~ sphenophylla

Mimulus rubellus

Eschscholtzia mexicana

Corydalis aurea

Gomphrena procumbens  
 Echinocactus latenteatus  
 all in bloom

1 Spiranthus parviflorus? ~~✗~~

~~Found~~ plants w/ leaves in  
 Mogollon found by Allen Campbell 15 Sep  
 Plants ~~leaves~~ w/ leaves and dried  
 flower stalks found in several  
 locations on north side of Signal  
 Peak, Pecos Altos Mtns <sup>9</sup> ~~10~~ Sep 67

by Todsens, Johnson, always  
 near Grandditch in lower elev. Creek  
 and aspen in higher elev. Malpais  
 Shrubbery in similar locations.  
 On 15 Oct leaves mostly faded,  
 some gone completely, some still  
 fresh. Plants w/ leaves collected  
 23 Sep 67. Plants checked 2 Dec 67  
 by Johnson and leaves ~~were~~

4 23 Nov

Leaves  
 Leaves

Leaves  
 Leaves

Leaves  
 Leaves

Leaves  
 Leaves

Leaves  
 Leaves

Leaves  
 Leaves

Leaves  
 Leaves

2 TRIP TO ORGAN MTNS 16-17 Sep 67

FOUND ON ORGAN PEAK 17 SEP

A BRIGHT RED SCROPHULARIA,

APPARENTLY NOT PREVIOUSLY

REPORTED. (I HAD FOUND THIS AT  
 ROCK HOUSE SPRING ON 17 JUL 65 AND  
 TAKEN A PHOTO)

TRIP TO SOUTH END OF PELONCILLO  
 MTNS 7-8 OCT 67.

1. AT HEAD OF SIDE CANYON OF  
 GUADELOUPE CANYON - POTANOMETON  
 SPECIES, PROBABLY ILLINOENSIS  
 IN RANCH TANK ALONG WITH  
 LEMNA SP.

IN GUADELOUPE CANYON, ON N. NEX  
 SIDE SAGERETIA WRIGHTII?


5

Friday, 26 Apr 68

With Andy walked from Aguirre  
 Spring Road up Indian Hollow to  
 NW base of Sugarloaf. Altitude  
 5300' to 6750'.

Delphinium virens - 5300' - just beginning

Castilleja 5700'  
 Astragalus 5300'



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<https://archive.org/details/newmexicobotanis6163newm>

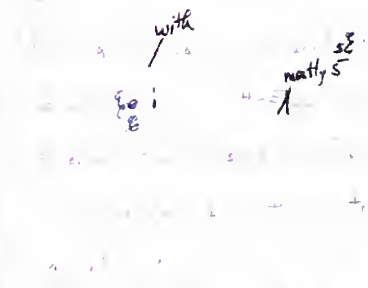




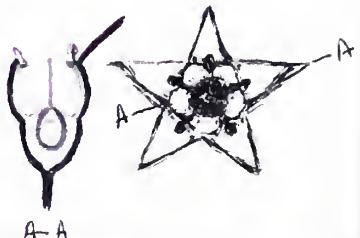
- 26 Apr 68 (cont.)
- Fendlera rupicola* 5700'-6500'  
full bloom
- Pentstemon* 5300-5700'
- Mimulus nasutus?* 5700-6500'  
in seep areas, small to grass,  
stems and leaves glandular, leaves  
orbicular, amplex, plants from 7cm  
to 4 dm tall
- Gnaphalium chilense*  
*Lepinus concinnus*
- Dracopis muscivorus*  
*Pedicularis longimanata* var. *multiflora*  
teeth on leaflets.

- 29 Apr 68
- Franklin Mts - Scenic Drive
- Agavea microphylla*  
*Stenandrium barbatum*  
*Polygala* sp. Name sp.
- Christo Rey  
*Stenandrium barbatum*  
*Chamaecarache* sp  
*Coleseia*

- 29 Apr 68 (cont.)
- Psathyrotes* sp. *scaposa*
- Comandra pallida*



- 8
- 3
- calyx
- sap clear.



- 9
- GORDON C. CREEL BIOLOGY DEPT.  
ANGELO STATE COLLEGE  
SAN ANGELO, TEX. RECORDS
- Mrs ELEANORE HERNDON TULLEY  
BIOLOGY DEPT (MICROBIOLOGIST)  
UTEP

- 5 MAY 68 - SHALAM HILLS
- TRIDESANTIA SCUTELLORUM* COMPLETELY  
GROWN
- Gilia*
- PHACELIA CORROGATA* AND *INTERMEDIA*
- ERIGON PUNILA?* *MEZAPODIUM*
- STREPTANTHUS*
- HEDEERA*

- 12 May 68 - Organs - Fillmore
- above 6000' - *Dryopteris runcinatum*
- South facing slopes above Fillmore Spring
- Cuscuta bigelovii*

- 10 May 68 (continued)
- Sedum* - mossy may be *Cucur*  
*Pentstemon fendleri* - *Psathyrotes* 5000' base
- Chamaecarache* - " " "
- P. longicaule* - just below nervous
- Leptostemum* - 5000' - 7000'
- Dalea pycnantha* - 7000' - 8000'
- Delphinium viridescens* - 5500'
- Pentstemon spectabilis* - just above  
mining camp
- Phlox thimbleberry* (name var)  
*Thlaspi fendleri* - about 7000'
- Castilleja*
- Pinus jeffreyi* - 19" dbh
- Pinus jeffreyi* var. *fillmoreana* - Fillmore Spring
- Lawsonia alba* - Fillmore Spring
- 11" dbh
- Morus microphylla* - " "
- Mimulus guttatus?* - " "
- Salix lasiophylla* - Canyon below Fillmore Spring
- Ptelea agnata* - 10' dbh - near nervous
- Chamaecarache* - 5000' - 6000'
- Agavea chrysanthia* - Fillmore box + seep  
above Fillmore Spring
- Fendlera rupicola* - Fillmore Box above Fillmore Spring
- Sonchus oleraceus* - creek - jumping train  
above Fillmore Spring
- Viopappus pyramidalis* - *Psathyrotes* moss
- La Cueva* - just past blooming
- Aplopappus spinulosus* - *Psathyrotes* near La Cueva

- 11
- 18 May - Up from Aguirre Spring
- Symphoricarpos rotundifolius* 6200'  
- 7500'
- Ribes leptanthum* 6200'  
- 7500'
- Gaillardia*  
*Plantago*  
*Mimulus rubellus*  
" *guttatus*
- Heuchera parvifolia*
- Erigeron* - everywhere
- Oreocarya luteo-rosea*
- Saxifraga eriophora* - gneiss toward  
S. of 6200' - exp. in canyon bottom at  
7500'
- Sperberia polifolia* - very late, mostly  
thin blooming - 6000' - 7500'
- Smilacina racemosa* var. *complexicalis*  
under rocks among large boulders @ 7500'  
Plants 50 cm tall.
- Sambucus racemosa*
- Suaeda frigidifolia*
- Dryopteris runcinatum*
- Thlaspi*  
*Prunella viridis*  
*Fendlera rupicola*





12 Along Rio Grande S of Hwy 80 bridge  
25 May 68

*Eustoma* growing but not out

*Glycyrrhiza lepidota*

*Pinus sericea*

*Apocynum* sp.

*P.* - *sericea*

Hwy I-25 @ Tanco 26 May 68

*Dysodia* sp.

*Senecio* *hyssopifolius*

*Hymenocallis* *viridifolia* *Jamesia* *pappus*

*Rhaleya*

Rincon Hills

*Aster tagetinus*

*Melampyrum*

*Aster tanacetifolius*

*Aphelandra humilis*

*Gaillardia pinnatifida*

*Spiraea* sp.

Latium Springs

*Thelaspis* *negativum*

13 2 June 68 Sec 10, T10S, R13W Grant County

Lower slopes of Signal Peak - Pines Hills

*Spiranthes parviflora* - just beginning

*Corallorhiza innata* - just beginning

*Corallorhiza wisteriana* - just beginning

All within 20 feet of each other

*Senecio actinella*

Camping area just down from 2 June 68

W. Fork of Gila - just upstream from junction of

White Rock Canyon 2 June 68 Sec 17, T12S, R14W, Grant County

*Corallorhiza striata*

Little Bear Canyon - steep N-facing seep -

Sec 11, T12S, R14W, Grant County

*Aquilegia chrysantha* 6 June 68

*Habenaria brucea*, just beginning

14 Sec 16, T16S, R22E

6 June 68 - Wright's Cabin Canyon, Grant County

Same location as above - *Corallorhiza wisteriana*, *Spiranthes parviflora*

6 June 68 Sec 21, T16S, R22E Sierra Co.

Canyon on east slope of Black Range

*Spiranthes parviflora* just beginning

*Corallorhiza wisteriana* just beginning

6 June 68

6 June 68

6 June 68

6 June 68

6 June 68

6 June 68

6 June 68

6 June 68

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6 June 68

6 June 68

6 June 68

15 Korr Canyon 23 June 68

*Corallorhiza wisteriana*

*Habenaria arizonensis*

*Androsace*

*Jamesia americana*

Bluff Springs Sec 17, T17S, R12E

*Habenaria* sp. Sparsely

*Linum* (blue)

*Dodecatheon*

1st canyon to east above mouth of

W. Fork of Gila

*Corallorhiza innata* (incl

albes according to Andy)

*Gordyana oblongifolia* (not in

blooms - w/ last years flower spikes)

Serra Blanca Ski Basin, N Fork

of Rio Grande

*Habenaria sacca*? *hyperborea*?

*Calypso bulbosa* (incl partial

alba (very late))

16 7 Jul 68

*Gilia aggregata*

*Anemone* sp.

*Thalictrum* sp. *Achillea* sp.

*Thalictrum* *litoreum*

*Eriogonum* sp.

*Heuchera* sp. *H. discolor*

*Clematis* sp. *C. integrifolia*

*Cerastium* sp. *C. arvense*

*Erigeron* sp. *E. philadelphicus*

*Stachys* sp. *S. arvensis*

2 different peas

*Hemerocallis* sp.

*Hydrophyllum* sp. *H. virginicum*

14 Jan 68

14 Jan 68

14 Jan 68

14 Jan 68

14 Jan 68

14 Jan 68

17 21 Jul 68

Wright's Cabin Canyon

*Habenaria* sp. *H. viridifolia* (early)

*Sarcocolla* sp. *S. purpurea*

Along Creek Trail from Emery Pass to Hillbuck

*Pentstemon* (Nuttall's) - cross "O" at edge

*Pentstemon* *pinnatifidus* - open rocky place

*Pentstemon* *hirsutus*

*Podium* sp. *P. angustifolium* - Hillbuck Pt

*Delphinium* *heterophyllum* - " "

*Corallorhiza innata* - " "

*Oralis*

*Oralis* gray - 1 mi S of Hillbuck Pt. E. of

*Phacelias*

*Holodiscus dumosus*

*Heuchera* just S of Hillbuck Pt. E. of

*Heuchera* *versicolor* Cross "O" at edge

*Viola canadensis* E. slope

*Potentilla hippiana* - open areas

*Draba* *helvetica* var. *blanda*







18

21 July 68  
*Aquilegia*  
*Erigeron*  
*Lobelia*  
*Sorbus* Cross "O" Mtn

37 July 68 *Agrostis* scrub from

*Scrophularia* *Passiflora*  
*Helianthus* *Leonurus*  
*Aster* *Androsace*  
*Phlox*  
*Phlox*  
*Penstemon* *Androsace*  
*Castilleja* *inagala*  
*Saxifraga* *wrightii*  
*Saxifraga* *viridula* *Corporis* *folia*  
*Tachyura*  
*Stachys* *umbellata*  
*Helianthus*  
*Gel* *wrightii*  
*Muscicapa* *multiflora*  
*Tachyura*  
*Scrophularia* *Passiflora*  
*Monarda* *multiflora* *folia*  
*Carlina* *viridula* *inagala*  
*Physalis*  
*Lepidium* *astur* *folia*

19

Longview Ski Area 3 Aug 68  
 (Puyate Mtn)  
*Geophila* *oblongifolia* *viridis*  
*Cratogeomys* *uscalita* - long fruit  
*Cratogeomys* *wisteriana* - pulled and spent  
*Zygadenus* *Aster* *in* *fruit*  
*Castilleja* *Critica* *aggregata*  
*Campanula* *Purshiana* *bulbata*  
*Crataegus*  
*Aster*  
*Cerastium*  
*Phlox* *sp.*  
 Tase Ski Basin 4 Aug 68  
*Aquilegia* *cascadica*  
*Helianthus* *saeculata*

Sandia Mtns 5 Aug 68

*Sandia* *Creat*  
*Neuchera* *pulegiata* *Mertensia*  
*Penstemon* (ssp) *Penstemon* *moles*  
*Aster* *Geophila* *oblongifolia*  
*Delphinium* *sepioides* *sp.* *oblongifolia*  
*Pedicularis* *Groggi* *Capri* *Spring* *campus*  
*Primula* *Cratogeomys* *striata*  
*Castilleja* *viridis*  
*Scrophularia* *passiflora*

20

Sagebrush Mtns 11 Aug 1968  
 Telephone Canyon  
*Geophila* *oblongifolia* *just* *beginning* *to* *blow*  
*Cratogeomys* *uscalita* *still* *blowing*  
*Helianthus* *aggregata* *var* *bravida* *folia*  
*Helianthus* *aggregata* *in* *seed* *spring* *hillside*  
*Mimulus*  
*Penstemon*  
*Cerastium*  
*Cerastium* *viridula*  
*Tradescantia*  
*Campanula*  
*Mimulus* *latifolius*  
*Hypocissus* *radialis*  
*Potentilla*  
*Veronica*  
*Rumex*

Red Bluffs

*Delphinium*  
*Gratia* *aggregata* *scarlet* *pink* *forms*

Nelson Canyon

*Cratogeomys* *uscalita* *still* *blowing*

Silver Spring Canyon

*Cerastium* *viridula*  
*Cratogeomys* *striata* *in* *fruit*  
*Helianthus* *aggregata* *var* *bravida* *folia*  
*Helianthus* *aggregata*  
*Synanthus* *perispermus* *in* *leaf* *at* *the* *base*  
*Penstemon*  
*Castilleja*  
*Potentilla* *Penstemon*  
*Atropa*

21

21 Aug 68  
 Silver Spring Canyon, cont.

Griffiths Creek, Devil's Backbone, Black Range

68-1 *Scrophularia* *neomexicana*  
 most in fruit - still a few blossoms -  
 68-2 *Sicyopterus* *ampelophyllus* - mostly  
 in fruit  
 68-3 *Scrophularia* *oblongifolia*?  
*Scrophularia* *uniflora*  
 68-4

22

Orchids in the Herbarium @

Southwestern Research Station  
 Portal, Arizona

1. *Malaxis* *Elzebergii*, Long Park, Chiricahua  
 Mtns, 9,325', 12 Aug 59
2. *Cratogeomys* *uscalita*, SE slope of Fly Peak  
 on Summit Trail, Chiricahua Mtns, 12 Jun 58
3. *Cratogeomys* *striata*, Greenhouse trail, Chiricahua  
 Mtns, 7000', in fruit, 13 Aug 65
4. *C. striata*, W slope Fly Peak, Chiricahua,  
 9,000', 17 June 58
5. *C. wisteriana*, E Turkey Creek, Chiricahua  
 1500', 3 May 65
6. *Geophila* *oblongifolia*, betw Stork's  
 Middle fork of Cave Creek and Antelope  
 Chiricahua, 8000', 12 Aug 65

23

Cave Creek 28 Sept 68

@ 6000', 1/2 mi above Devil's Backbone

*Malaxis* *Souleii*  
*Lebanon* *cardinalis* at Little Dam  
 Higher up *Scrophularia* *oblongifolia* trail to  
 Chiricahua Peak  
*Stevia* *serrata*  
*Mimulus* *latifolius*  
*Silene* *laciniosa*





FB68-81

<sup>1</sup>  
Ruicon Hills - 15 Sept 1968*Gaillardia pinnatifida**Baileya multiradiata**Perezia Wrightii**Trixis californica**Nadia?**Sphaeralcea*





2	Date	Location	Tentative iden	Identification	Remarks
1	26 Jan 69	1 mi. SE of Mahoney Westernmost Mtns	Thamnosma	terreum	Infert and most leaves gone - surface of remaining rocks photo top @ 5200'
2	26 Jan 69	"	Baccharis	sarcocoides	
3	2 Feb 69	North of Long Canyon Organ Mtns	Sedum	griffithsii	
4	2 Feb 69	"	Phoradendron	bellianum	Specimen to Herb. det. - will be in bloom in abt 2 wks on 3 slope markings
5	9 Feb 69	Bishop's Cap	Thamnosma	terreum	
6	9 Feb 69	"	Agave		
7	9 Feb 69	"	Agave	lechuguilla	Common on steepest slopes
8	9 Feb 69	"	Notholaena	montana ciliolata	Common Initial blooming - one fruit already
9	16 Feb 69	"	Thamnosma	terreum	On limestone hill w/ vegetation and castillo
10	23 Feb 69	San El Esteban Rd on Johnson Ranch	Agave	Tuberum	Native to San Geronimo Canyon into Arizona. Just beginning also in bloom above Pinal along Cave Creek.
11	23 Feb 69	Johnson Ranch Crescent Canyon	Sarcocoides	salicifolia	New Soc. New Mexico?
12	23 Feb 69	Palm Springs Mtns	Arctostaphylos	DC.	
13	23 Feb 69	Palm Springs Mtns	Small Ericaceae	Phacelia fendleri	
14	1 Mar 69	Shelton Hills	Dioscorea	flaberrima	
15	1 Mar 69	"	Polygala		
16	9 Mar 69	South of Long Canyon Long Canyon	Glossopetalum	Forbesii spinosum	
17	"	"	Mimulus	rubellus	Annual
18	"	"	Mimulus		Perennial
19	"	"	Pellaea	wrightiana	

4	Date	Location	Tentative iden	Identification	Remarks
1	28 Mar 69	Shelton Hills	Erigeron	caespitosus	limestone - windy canyons
2	"	"	Coalium	proliferum	
3	"	"	Dioscorea	acerosa	Just beginning,
4	"	"	Dryas		
5	"	Shelton Hills	Astragalus	absinthifolia	This is supposed to be opposite to be opposite leaves or rather.
6	"	"	Polygala	scoparioides?	Just beginning
7	"	"	Stellaria	barbata	(Both in the same.)
8	"	"	Stellaria	validus	
9	"	"	Stellaria	viridifolia	Common
10	"	"	Sphaeralcea	acerosa	Just beginning.
11	30 Mar 69	Organ Mesa above Aqueduct Spring	Myosurus	capitatus	Deep red
12	"	"	Androsace	occidentalis	" " along/preceding
13	"	"	Corydalis	sp.	
14	"	"	Ribes	sp.	
15	"	"	Erigeron	radiatus	
16	"	"	Ceratium	texanum	
17	"	"	Taraxacum	officinale	
18	"	Slope below Aqueduct Spring	Lotus		
19	"	"	Astragalus		
20	"	Slope below Aqueduct Spring	Gilia	sinuata (inexplicata)	
21	"	"	Umbellifer		







6

See 7, 15, 16, 17 T 345, R 2145  
and See 11, 12, 14 T 345, R 2210

4 Apr 69	Gardale, Pass and Canyon	Dichelostemma	pulehiellum
"	"	Plagobothrys	arizonicus
42 "	"	Aster	hirtellus - arenosus
43 "	"	Eriogonum	
44 "	"	Gomphrena	caespitosa
45 "	"	Linum	lewisii
46 "	"	Corydalis	aurca
47 "	"	Astragalus	
48 "	"	Gracillaria	hacincana?
49 "	"	Lupinus	
50 SA 69	See 12, 14 See 11 T 345, R 2210	Ceanothus	Greggii
50A "	"	Ceanothus	microphyllus
51 "	"	Dryopetalon	nucleatum
52 "	"	Eriogonum	caespitosa
52A "	"	Eriogonum	caespitosa
53 "	"	Eriogonum	caespitosa
53A "	"	Eriogonum	caespitosa
54 "	"	Eriogonum	caespitosa
55 "	"	Eriogonum	caespitosa
55A "	"	Eriogonum	caespitosa
56 "	"	Eriogonum	caespitosa
57 "	"	Eriogonum	caespitosa
58 "	"	Eriogonum	caespitosa
59 "	"	Eriogonum	caespitosa
59A "	"	Eriogonum	caespitosa

7

Rocky hillides, in desert park called.

Handwritten note: *Handwritten note: 1054*

Solitary sessile flowers  
around

8

See 14, T 345, R 3145

60 SA 69	Vangelia, Hill, Ave	Plantago	
61 "	"	Gilia	
62 "	"	Thermopsis	texana
63 "	"	Gomphrena	
64 "	"	Hebecladia	sp
65 "	"	Umbelliferae	
66 "	"	Brassicaceae	
67 "	"	Linum	puberulum
68 "	"	Allium	macrocarpum (dentata)
69 "	"	Dalea	peganthera
70 30 Apr 69	Bishop's Cap	Thermopsis	texana
71 "	"	Eriogonum	microphyllum
71A "	"	Eriogonum	microphyllum
72 "	"	Eriogonum	microphyllum
73 "	"	Dalea	wrightii
74 "	"	Lesquerella	purpurea
75 "	"	Sesuvium	longilobus
76 "	"	Lappula	texana
77 "	"	Cryptantha	
78 "	"	Phacelia	intermedia?
79 "	"	Dalea	
80 "	"	Euphorbia	Chamaecrista (Hillebrandii) or Chamaecrista?

9

not in bloom - sample straight  
central, 5-7 pedicels, tubular not person





10				11	
7-81	26 Apr 69	Qui S. Hingy? on E. Grande	Aphelostegia humilis		This would be <sup>in fruit</sup> <del>nearby</del>
7-82	"	"	Cleome	perv. flora	Common all along river
7-83	"	on E. Grande	Astragalus	rumicatus	
7-84	"	on E. Grande	Heliotropium	xerophilum	
7-85	27 Apr 69	on E. Grande	Tragia	stylaris	Among rocks along w. <sup>of</sup> <del>on</del> E. Grande
7-86	"	"	Tragia	repensifolia	Here hillsides
7-87	"	"	Ceanothus	pallidus	Some places, rare east of here.
7-88	"	Hillsides above Ogden, N.W.	Nolina	texana <del>var. compacta</del>	Ogden Hills type local
7-89	"	Indian Hollow	Corsium	neomexicanum	
7-90	"	"	Penstemon	faulkneri	
7-91	"	"	Delphinium	viridescens var. Hartoni	
7-92	"	"	Verbena	wrightii	Pink purple, flowers purple
7-93	"	Agave Spgs. Road	Verbena	ambigua	Blue purple, dense vine
7-94	"	"	Convolvulus	incanus	
7-95	"	"	Dioscorea	acerosa	
7-96	"	"	Aster	arenosus - hirtifolius	This is the early spring form with glabrous upper leaf surface
7-97	"	"	Lotus	rigidum - barnebyi hybrid?	medium in w. side
7-98	"	"	Lupinus	carolinensis (K&P)	
7-99	"	"	Erythronium		
7-100	"	"	Thlaspi	faulkneri	Variable - flower color red, and shape - capsule shape
7-101	"	"	Lepidium	medium	Ogden Hills are type local.

12				13	
2	27 Apr 69	Indian Hollow	Galium	Aparine	Hooked leaves in fruit > 5 leaves in whorl
3	"	"	Galium	microphyllum	
4	"	"	Euphorbia	albomarginata	
5	"	"	C. lia	sinuata - linearis p. curv.	
16	"	"	Malsce-thrix	faulkneri	
17	"	"	Calycotome	wrightii	
18	"	Agave Spgs Road	Evolvulus	pilosus	
19	"	"	Microseris	linearifolia	
20	"	"	Aplopappus	spinulosus	
21	"	Indian Hollow	Castilleja	integra	
22	"	"	Mentzelia	albicaulis (var. perv. flora?)	
23	"	"	Astragalus	humistratus var. serotinus	
24	May 69	Mimbres River near Stone Craters	Hybanthus	verticillatus	
25	"	"	Camissonia	strigosus	
26	"	"	(Hibiscus?)	cyathoides linearis	
27	"	"	Veronica	trachelium - aquatilis	
28	"	"	Hymenocallis	melanos	
29	"	"	Dalea	parviflora	
30	"	"	Aster	abundans	
31	"	"	Phacelia	arizonica	
32	"	Galinas Creek below S. Fork of King's Canyon	Prunus	emarginata var. coronata	











18	Date	Location	Ident. notes	Remarks	19
62	30 May 69	Rustler Fork	<i>Corallorhiza</i>	<i>striata</i>	Just beginning Chuska
63	"	"	<i>Spiranthes</i>	<i>parviflora</i>	One to two weeks early
64	"	"	<i>Senecio</i>	<i>umbellatus</i>	
65	"	"	<i>Lupinus</i>		
66	"	"	<i>Thermopsis</i>	<i>parviflora</i>	
67	31 May 69	Sun River	<i>Ranunculus</i>	<i>pterocarpus</i>	5 locations from 7800' to
68	"	Quinn Saddle	<i>Spiranthes</i>	<i>parviflora</i>	8500', lower ones in bloom
69	"	Quinn Saddle	<i>Arceuthobium</i>	<i>campylopedum form Blumieri</i>	On SW white pine
70	"	Lake Fork and Tanager	<i>Euphorbia</i>		
71	"	"	<i>Thalictrum</i>		
72	8 June 69	Blackfoot Canyon, near Bear River	<i>Corallorhiza</i>	<i>striata alba</i>	Found by 7 AT - w. bearing close in heavy bluff - NW 1/4 Sec 13 R12E T1
73	"	Blackfoot Canyon	"	"	
74	"	"	<i>Phlox</i>	<i>nana?</i>	North facing 11 west slope / road
75	14 June 69	Blackfoot Canyon	<i>Lupinus</i>	<i>stans</i>	Finisland
76	"	Silver Spring Canyon	<i>Corallorhiza</i>	<i>striata</i>	Lower flowers first
77	"	"		<i>radicatum</i>	Low bog
78	"	"	<i>Dodecatheon</i>		At edge of bog
79	"	"	<i>Senecio</i>		" " "
80	"	"	<i>Erigeron</i>	<i>nobilis</i>	" " "
81	"	Blackfoot Canyon	<i>Spiranthes</i>	<i>parviflora</i>	Just beginning

20	Date	Location	Ident. notes	Remarks	21
82	"	"	<i>Corallorhiza</i>	<i>guttata</i>	
83	"	"	<i>Senecio</i>	<i>umbellatus</i>	
84	"	"	<i>Thalictrum</i>		
85	"	"	<i>Phlox</i>		
86	"	"	<i>Lupinus</i>		
87	"	"	<i>Corallorhiza</i>	<i>striata</i>	
88	"	"	<i>Senecio</i>	<i>umbellatus</i>	
89	"	"	<i>Thalictrum</i>		
90	"	"	<i>Phlox</i>		
91	"	"	<i>Lupinus</i>		
92	"	"	<i>Corallorhiza</i>	<i>striata</i>	
93	"	"	<i>Senecio</i>	<i>umbellatus</i>	
94	"	"	<i>Thalictrum</i>		
95	"	"	<i>Phlox</i>		
96	"	"	<i>Lupinus</i>		
97	"	"	<i>Corallorhiza</i>	<i>striata</i>	
98	"	"	<i>Senecio</i>	<i>umbellatus</i>	
99	"	"	<i>Thalictrum</i>		
100	"	"	<i>Phlox</i>		
101	"	"	<i>Lupinus</i>		
102	"	"	<i>Corallorhiza</i>	<i>striata</i>	
103	"	"	<i>Senecio</i>	<i>umbellatus</i>	
104	"	"	<i>Thalictrum</i>		
105	"	"	<i>Phlox</i>		
106	"	"	<i>Lupinus</i>		
107	"	"	<i>Corallorhiza</i>	<i>striata</i>	
108	"	"	<i>Senecio</i>	<i>umbellatus</i>	
109	"	"	<i>Thalictrum</i>		
110	"	"	<i>Phlox</i>		
111	"	"	<i>Lupinus</i>		
112	"	"	<i>Corallorhiza</i>	<i>striata</i>	
113	"	"	<i>Senecio</i>	<i>umbellatus</i>	
114	"	"	<i>Thalictrum</i>		
115	"	"	<i>Phlox</i>		
116	"	"	<i>Lupinus</i>		
117	"	"	<i>Corallorhiza</i>	<i>striata</i>	
118	"	"	<i>Senecio</i>	<i>umbellatus</i>	
119	"	"	<i>Thalictrum</i>		
120	"	"	<i>Phlox</i>		
121	"	"	<i>Lupinus</i>		
122	"	"	<i>Corallorhiza</i>	<i>striata</i>	
123	"	"	<i>Senecio</i>	<i>umbellatus</i>	
124	"	"	<i>Thalictrum</i>		
125	"	"	<i>Phlox</i>		
126	"	"	<i>Lupinus</i>		
127	"	"	<i>Corallorhiza</i>	<i>striata</i>	
128	"	"	<i>Senecio</i>	<i>umbellatus</i>	
129	"	"	<i>Thalictrum</i>		
130	"	"	<i>Phlox</i>		
131	"	"	<i>Lupinus</i>		
132	"	"	<i>Corallorhiza</i>	<i>striata</i>	
133	"	"	<i>Senecio</i>	<i>umbellatus</i>	
134	"	"	<i>Thalictrum</i>		
135	"	"	<i>Phlox</i>		
136	"	"	<i>Lupinus</i>		
137	"	"	<i>Corallorhiza</i>	<i>striata</i>	
138	"	"	<i>Senecio</i>	<i>umbellatus</i>	
139	"	"	<i>Thalictrum</i>		
140	"	"	<i>Phlox</i>		
141	"	"	<i>Lupinus</i>		
142	"	"	<i>Corallorhiza</i>	<i>striata</i>	
143	"	"	<i>Senecio</i>	<i>umbellatus</i>	
144	"	"	<i>Thalictrum</i>		
145	"	"	<i>Phlox</i>		
146	"	"	<i>Lupinus</i>		
147	"	"	<i>Corallorhiza</i>	<i>striata</i>	
148	"	"	<i>Senecio</i>	<i>umbellatus</i>	
149	"	"	<i>Thalictrum</i>		
150	"	"	<i>Phlox</i>		
151	"	"	<i>Lupinus</i>		
152	"	"	<i>Corallorhiza</i>	<i>striata</i>	
153	"	"	<i>Senecio</i>	<i>umbellatus</i>	
154	"	"	<i>Thalictrum</i>		
155	"	"	<i>Phlox</i>		
156	"	"	<i>Lupinus</i>		
157	"	"	<i>Corallorhiza</i>	<i>striata</i>	
158	"	"	<i>Senecio</i>	<i>umbellatus</i>	
159	"	"	<i>Thalictrum</i>		
160	"	"	<i>Phlox</i>		
161	"	"	<i>Lupinus</i>		
162	"	"	<i>Corallorhiza</i>	<i>striata</i>	
163	"	"	<i>Senecio</i>	<i>umbellatus</i>	
164	"	"	<i>Thalictrum</i>		
165	"	"	<i>Phlox</i>		
166	"	"	<i>Lupinus</i>		
167	"	"	<i>Corallorhiza</i>	<i>striata</i>	
168	"	"	<i>Senecio</i>	<i>umbellatus</i>	
169	"	"	<i>Thalictrum</i>		
170	"	"	<i>Phlox</i>		
171	"	"	<i>Lupinus</i>		
172	"	"	<i>Corallorhiza</i>	<i>striata</i>	
173	"	"	<i>Senecio</i>	<i>umbellatus</i>	
174	"	"	<i>Thalictrum</i>		
175	"	"	<i>Phlox</i>		
176	"	"	<i>Lupinus</i>		
177	"	"	<i>Corallorhiza</i>	<i>striata</i>	
178	"	"	<i>Senecio</i>	<i>umbellatus</i>	
179	"	"	<i>Thalictrum</i>		
180	"	"	<i>Phlox</i>		
181	"	"	<i>Lupinus</i>		
182	"	"	<i>Corallorhiza</i>	<i>striata</i>	
183	"	"	<i>Senecio</i>	<i>umbellatus</i>	
184	"	"	<i>Thalictrum</i>		
185	"	"	<i>Phlox</i>		
186	"	"	<i>Lupinus</i>		
187	"	"	<i>Corallorhiza</i>	<i>striata</i>	
188	"	"	<i>Senecio</i>	<i>umbellatus</i>	
189	"	"	<i>Thalictrum</i>		
190	"	"	<i>Phlox</i>		
191	"	"	<i>Lupinus</i>		
192	"	"	<i>Corallorhiza</i>	<i>striata</i>	
193	"	"	<i>Senecio</i>	<i>umbellatus</i>	
194	"	"	<i>Thalictrum</i>		
195	"	"	<i>Phlox</i>		
196	"	"	<i>Lupinus</i>		
197	"	"	<i>Corallorhiza</i>	<i>striata</i>	
198	"	"	<i>Senecio</i>	<i>umbellatus</i>	
199	"	"	<i>Thalictrum</i>		
200	"	"	<i>Phlox</i>		



22  
203A

"

Thelaspis

longipes  
~~longipes~~ pedicularis  
s.

23

207

"

Sage in Silver Springs  
Long in Silver Springs

longipes

longipes

207

"

Organ Peak

Umbellifer  
Westrum

Umbellifer

208

"

"

Umbellifer

Umbellifer

All the way from the ridge to  
"Hugo's Spring"

209

"

Rockhouse Spring

Salvia

remota, sinuata

210

"

Near Narrows

Longiphyllo

Longiphyllo

211

"

"

Galium

Galium

212

"

"

hesperocolla

purpurea

213

"

"

Phytolacca

hirsutifolia

214

"

Feltner Canyon  
just below the Mining Camp

Tridactylon

occidentalis var. occidentalis

Blue nightshade forms in  
same place pp.

215

"

Villars Spring

Aquilegia

hirsutifolia

216

"

"

Stachys

Stachys

217

"

Valley of La Cueva

Ceanothus

Ceanothus

218

"

Feltner Canyon  
1 mi. S of Hugo's Spring

Talinum

angustifolium

219

"

1.9-2.1 mi S of Hugo's Spring

Eriogonum

erectum (Crassifolium)

Along Rio Grande in bank

220

"

Hugo's Spring

Eriogonum

erectum (Crassifolium)

221

"

Hugo's Spring

Eriogonum

erectum (Crassifolium)

24

SE of Silver Springs

222

"

27 July 69

Aquilegia

can. 600'

Very low on rocks, one side  
N facing cliffs

223

"

"

Chrysopsis

Chrysopsis

224

"

"

Gutierrezia

Gutierrezia

225

"

"

Babin

Babin

226

"

"

Tetraglochin

Tetraglochin

227

"

"

Eriogonum

erectum

Western white flower

228

"

"

Poa

Poa

229

"

"

Poa

Poa

230

"

3 Aug 69

Poa

Poa

231

"

"

Poa

Poa

232

"

"

Poa

Poa

233

"

"

Poa

Poa

234

"

"

Poa

Poa

235

"

4 Aug 69

Poa

Poa

Poa being studied by

236

"

"

Poa

Poa

237

"

"

Poa

Poa

238

"

"

Poa

Poa

239

"

"

Poa

Poa

240

"

"

Poa

Poa

241

"

"

Poa

Poa

242

"

"

Poa

Poa





— stamophylla

*Erigeron platyphyllus*  
*acutellus*

Entered by post, much more dangerous  
in bed for 1/2 yr. Spent time.





30

- 291 13 Sept 69 Fillmore Spring  
 292 " " Hillsdale above  
 293 " " Fillmore Falls  
 294 21 Sept Cloudcroft  
 295 " " Bitterroot, Teton Natl  
 296 " " Hwy. 70  
 297 " " North Canyon  
 298 " " near Bitter Lake

- Bidens bigelovii?  
 Gilia brachysiphon  
 Petasites pustulata  
 Bidens tenuisecta  
 Santarellia florosa  
 Aster (Anemone-like)

- 297 " " "  
 298 " " "  
 299 " " "  
 300 " " "  
 301 " " "  
 302 " " "  
 303 " " "  
 304 " " "  
 305 " " "  
 306 " " "  
 307 " " "  
 308 " " "  
 309 " " "

- Rosa stellata  
 Fraxinus velutina  
 Dalea  
 Polygala alba  
 Chrysanthemum  
 Eupatorium herbaceum  
 Phacelia  
 Menziesia  
 Genetia  
 Composite  
 Solidago  
 Salvia

- 310 27 Sept 69 Redoubt Lake  
 Grand Teton Natl, Wyo.

- Eriogonum aureum

31

32

- 11 27 Sept 69 McCall, near valley  
 12 " " "  
 13 " " "  
 14 " " "  
 15 " " "  
 16 28 Sept 69 Red Wash 15 mi  
 17 29 Sept 69 west of Shoshone  
 18 " " "  
 19 " " Monument Valley  
 20 " " Comb Ridge  
 21 " " "  
 22 " " "

- Cercopsis cordemourea  
 Agrostis pellida  
 Aster adnatus & agrostoides  
 Aster cernuus var. cernuus  
 Allium Geigeri  
 Eriogonum leptophyllum  
 Chamaenerion  
 Gilia?  
 Eriogonum corymbosum, a var.  
 Aster  
 Eriogonum pumilum  
 Cordylanthus

33

- Cordylanthus





34  
1 Nov 71

- 151 Pancho Creek Bx x  
2 mi. W of Hillsboro  
— " "  
152 Long Engle Mine - S Fork  
Pancho Creek, Black Range  
153 " "  
154 " "  
155 " "  
156 " "  
157 " "  
158 " "  
159 " "
- Sapouaria  
Agastache  
Senecio  
Erigeron  
Valeriana  
Penstemon  
Astragalus  
Ficellula  
"  
Erigeron

officinale  
cons. ~~ovipetris~~  
neomexicanus?  
mexicana?  
arizonica  
torreyi?  
(Tephrosia?)  
lanulosa  
borealis

972 ✓

- Feb - Eschscholtzia mexicana in bloom near Parker Well just east and south of intersection of Hwy. 70 and USMR access road. Also near 100K stand at a BKK.
- Feb - near 300K Stand - Eschscholtzia mexicana, Mentzelia (paviflora?), Gilia, 2 Descurainias, Ceratophyllum, other Brassicaceae, ~~Tephrosia~~ Linaria texana (muss up but not in bloom yet)
- Feb - rocks near mouth of Soledad Canyon - Eschscholtzia mexicana, Echinocactus setosus, Mimulus tuberosus, Gilia sp., Malacothrix, Erigeron, Descurainia, Lepidium, Draba, Mimulus rubellus, Ceratophyllum

35

36

- 7 Feb - Soledad Canyon cut - Androsace, Linaria texana, Cryptantha,

9 Feb 2201 Lott's ~~herbarium~~ <sup>herbarium</sup> ~~near 500K~~ <sup>at USMR</sup> EUCRYPTA MICRANTHA

41 March

2202 USMR ASTRAGALUS sp.

2203 1 Mar 500K stand STREPTANTHUS

$106^{\circ}28'17''W$   
 $= 32^{\circ}20'34''N$

2204 3 Mar 500K stand PHACELIA

2205 " " LATHYRUS

2206 " " CERCIFOLIA

2207 9 Mar 1/2 mi S of Bear Canyon ~~San Andres Mts~~ <sup>E slope of San Andres</sup> CAMISSONIA chamaecristoides

Limestone hillsides @ 4400

2208 " " LUPINUS concinnus

2209 " " PHACELIA

2210 " " DYSSODIA ~~pentachrysa~~

2211 " " ~~Malacothrix fendleri~~

2212 " " CALYCOTRIS wrightii

2213 " " RATIBIDIA neomexicana

— also in bloom Echinocactus trigloridatus, Dalea, Draba,

214 16 Mar Mouth of Bear Canyon ~~San Andres Mts~~ <sup>San Andres Mts</sup> EUCRYPTA MICRANTHA

215 " " OENOTHERA CALIFORNIENSIS

Also Descurainia, Gilia, CRYPTANTHA, COLECEA, ALLIARIA

37













46

5 24 Jun 72 Scillet  
Sheldon Knob Canyon Galium Bothrockii = Wrightii  
16 " " Stephanomeria ?

7 24 June 72 Rhodes Canyon  
11 mi w/ of Red 7 Perityle stauraphylla  
8 " " Eudorona

One plant of about 100  
red ray flowers, 2 w/1, 1 w/2,  
1 w/3, all others none.  
In canyon bottom.

23

2 21 Jul 72 See above - mouth  
of Fleg Camp Canyon Polygala missouriensis  
13 29 Jul 72 North Slope of  
Hites Mtns. Malva's Santa Cruz (Cuscuta) (Cuscuta)

On limestone hill - east side  
of San Andres Mtns.

14 " " " " " " " " " " " "  
5 30 Jul 72 W. of Cabin  
Campground - Black Range Sisymbrium arizonicum

NE 1/4, Sec 9, R 4E, T 18S.

16 13 Aug 72 San Andres (J) Perityle stauraphylla  
17 14 Aug 72 S. of Santa Rosa Asclepias incarnata

" " " " " " " " " " " "  
" " " " " " " " " " " "  
15 Aug 72 84 just S  
of Ryeville Liatris  
" " " " " " " " " " " "  
" " " " " " " " " " " "  
" " " " " " " " " " " "  
" " " " " " " " " " " "

Ipomoea or Convolvulus  
Dalea juarezii  
Toumoussia  
Melampodium

48

18 16 Aug 72 in box  
Twining - Redondo Halimolobos hyperborea var.

- Late -

" " " " " " " " " " " "  
7 2 Aug 72 San Andres - S slope  
of Black Mtns. Perityle stauraphylla Lat 33° 27' 45" N  
Long 106° 27' 12" W Past highway - Jackson  
On NW 1/4 Sec 9, R 4E, T 18S.

- Past -

" " " " " " " " " " " "  
" " " " " " " " " " " "  
10 Sep 72 S Fork - Cave Creek  
Chiricahua Perityle cochiseensis

11 " " " " " " " " " " " "  
12 " " " " " " " " " " " "  
" " " " " " " " " " " "

13 26 Aug 72 Silver Spring Canyon  
" " " " " " " " " " " "  
14 11 Sep 72 San Andres  
Maple Camp - S Fork  
of Cave Creek, Chiricahua Brachystemum

Two plants

15 11 Sep 72 " " " " " " " " " " " "  
" " " " " " " " " " " "  
" " " " " " " " " " " "

East facing cliffs or  
overhangs - dolomite?  
SW 1/4, Sec 9, R 4E, T 18S.  
5700 - 6000'

16 14 Oct 72 Sheep Mtn, San  
Andres Perityle stauraphylla

17 14 Oct 72 " " " " " " " " " " " "  
" " " " " " " " " " " "  
" " " " " " " " " " " "

NW 1/4, Sec 5, R 5E, T 18S

18 14 Oct 72 Johnson Park Canyon  
San Andres Perityle stauraphylla  
" " " " " " " " " " " "  
" " " " " " " " " " " "

upward glandular black fruit  
glandular pedicels, fruit & leaves

19 15 Oct 72 " " " " " " " " " " " "  
" " " " " " " " " " " "  
" " " " " " " " " " " "  
" " " " " " " " " " " "

Cosmos parviflorus  
Machosiphium bigelovii  
Sedum





50

- 87 15 Oct 72 <sup>South slope</sup> ~~San Jacinto~~ *Pentstemon* *stamophylla* var. *...*  
 90 25 Oct 72 Bear Canyon " "  
 ? " " " " "  
 " " " " " "  
 95 Sep " " *Pollux* *intermedia* Fendleri

- 92 22 Oct 73 Bull Rafter Trail *Pentstemon* sp. *nevadensis*  
 73 19 Nov 72 Hjo Mtns. AZ. *Pentstemon* *stamophylla*  
 74 28 Jan 73 <sup>San Jacinto Mtn</sup> *Astragalus* *melissimus*  
 95 17 Jun 73 <sup>Animas Creek</sup> *Mimulus* *floribundus*  
 96 " " *Limosella* *agrostica* pubiflora  
 97 24 Jun 73 <sup>Alamo 3 Rivers</sup> *Penstemon* *cardinalis* ssp. *cardinalis*  
 98 " " *Valeriana* *texana*  
 99 " " *Corallorhiza* *striata*  
 100 " " *Hieracium* *fendleri*  
 101 " " *Astragalus* *flexuosus*  
 102 4 Jul 73 <sup>Lim N of</sup> *Crotalaria* *repens*  
 103 26 Aug 73 <sup>San Jacinto Mtn</sup> *Chaparral* *crucis*  
 104 3 Sep 73 <sup>Guelapue Canyon</sup> *Perovskia* *macrocephala* \*new sp.

Alamo 3 Rivers Spring  
 SE 1/4 Sec 7, T25N, R4E, T25N  
 6250'

51

Diff above number 14, Organ  
 Pipe Cactus Mt. Alamo  
 Elev. 5500'. S 1/4 Sec 7, R4E, T25N  
 on E. of irrigation fl.  
 Early bloom 5500'  
 At edge of ponds & streams 5000'  
 on granite cliffs 7500'  
 Under pine-spruce-  
 oak 8000'  
 Pine-oak 7500'  
 Oak-pine 6000'  
 East of railroad near siding 4500'  
 Among granite boulders 5100'  
 In sandy canyon bottom 4400'

52

- 05 3 Sep 73 Guelapue Canyon *Dalea* *pogonathera*?  
 06 " " " *Macherauthera* *tagetina*?  
 07 " " " *Gnaphalium* *chilense*?  
 08 " " " *Agastache* *wrightii*?  
 09 " " " *Silene* *neomexicana*?  
 10 " " " *Erigeron* ?  
 11 " " " *Maurandya* *wrightii*?  
 12 " " " *Sagittaria* *humbilis*  
 13 " " " *Rivina* *Cordia*?  
 14 " " " *Gilia* *multiflora*  
 15 " " <sup>East slope Palmarillo</sup> *Hedera* *hyssopifolia*  
 16 " " <sup>Mts along Rd 63</sup> *Linum* *neomexicanum*  
 17 " " " *Cucurbit* *kurthii*?  
 18 " " <sup>Guelapue Canyon</sup> *Allium* *aridum*? *arizonicum*?  
 19 " " <sup>East slope Palmarillo</sup> *Cirsium* *arizonicum*?  
 20 " " <sup>Mts along Rd 63</sup> *Moraea* *arizonicum*?  
 21 " " " *Agastache* *breviflora*  
 22 " " " *Eryngium* *drummondii*?  
 23 " " " *Chenopodium* *agatifolium*?  
 24 9 Sep 73 <sup>South Oscura</sup> *Macherauthera* *agatifolium*?  
 325 " " "

53

In sandy creek bottom 4400'  
 " " " " " "  
 " " " " " "  
 At base of cliffs 4400'  
 " " " " " "  
 " " " " " "  
 Under shrubs & trees "  
 Thickets @ base of cliffs "  
 In sandy bottom 4400'  
 At base of cliffs "  
 " " " " " "  
 6000'  
 " "  
 " "  
 Under lakes 4400'  
 5500' 6100'  
 " "  
 " "  
 " "  
 In seeping area. " "  
 Canyon bottom 6100'  
 " " "





54

Cajon Bonito, NE Sonora, 30 Apr

Plants seen in bloom

*Mimulus guttatus**Senecio salignus**Rhus radicans**Tillandsia recurvata**Prosopis juliflora**Anisacanthus thurberi**Epipactis gigantea**Asplenium ochroleucum**Rhus copallina*1001 *Mimulus cardinalis* ca \$500 in deep narrow box1002 *Astragalus humistratus* var *sonora*?1003 *Gnaphalium*1004 *Eugenia* by stream*Conoclinium mexicanum* 1 May

at Road San Antonio in foothills of San Luis Mts.

2 May, Cajon Bonito

*Astragalus allochrous**Lupinus concolor**Samolus floribundus*

55

Trip w/ Vince Roth, SWRS;  
Dr. Chas (Chuck) McMoran, Sierra Vista  
Gail Monson, Sept. AZ-Son. Desert Museum

56

Cajon Bonito, cont.

*Panotum paryi**Astragalus* sp.*Nicotiana**Stavia*?*Tetraspermum hispidum**Lupinus verbena-like**Scutellaria*

57





58 Cajon Bonito 30 Sept and 2 May 1974

59

- 1001 *Mimulus cardinalis* - at base of cliffs in box canyon immediately above creek.  
 1002 *Astragalus* sp. - in sandy areas of creek bottom  
 1003 *Grewia* sp. - in soil pockets below waterfall in side canyon  
 1004 *Erigeron* in moist edge of creek  
 1005 *Tetramesa hispida* - crevices of rhyolite cliffs and in rhyolite spalling below cliffs.  
 1006 Composite sandy creek bottom  
 1007 *Microseris*? moist edge of creek  
 1008 *Maurandya antirrhinifolia* common in soil pockets and below cliffs - mostly shaded.  
 1010  
 1011 } all in moist edge of creek  
 1012  
 1013 *Erigeron* Sandy creek bottom - spreading by underground rhizomes  
 1014 *Vicia leucophylla* Sandy creek bottom under cottonwood.  
 1019 *Samolus floribundus* Wet edge of creek  
 1015 *Astragalus* Sandy rocky creek bottom.  
 1016 *Scutellaria* Shady & gravelly side areas under oaks.  
 1017 *Pentstemon parryi* Sandy creek bottom - occasional

60 Cajon Bonito

61

- 1017 *Stevia* { Side canyon near waterfall  
 1018 *Nicotiana* { beside cave.  
 1019 *Mimulus* Below waterfall  
 1020 *Elytraria imbricata* Crevice in rhyolite cliff.  
 1021 *Pegonium harmala* 11 May 74 I 10 roadside 1/2 mi. E of Canyon de Chelly - Hidalgo Co.  
 1022 *Elytraria imbricata* crevices in rhyolite Guadalupe Canyon 1 mi. below Johnson's Ranch 11 May 74  
 1023 *Pedicularis pseudo-purpurea* gravelly base of cliffs  
 1024 *Guthriea verticillata* loam in canyon bottom  
 1025 *Comandra pallida* at base of oak.  
 1026 *Astragalus* sandy loam bottom  
 1027 *Briellia venosa*  
 1028 *P.*

128 *Samolus cuneatus* Dog Canyon 4 July 74

Saw *Portulaca* everywhere on Black Mtn. of Dog Canyon

*Petrophytum cespitosum* on both Black Mtn. & Dog Canyon

*Polygala* on Black Mtn. apparently not *riunulicola* says Tom Wendt.

July 74 - Big Hatchet Mtn., Sec. 18, T. 31S., R. 15W. - Extremely dry - getting better.

4829 - *Portulaca leonani*, cliffs on n. slopes of Big Hatchet Peak

*Petrophytum cespitosum* in great masses

Tom Wendt collected *Polygala* 'tessellata' at 5500' and at 7000'

*Quercus undulata* everywhere



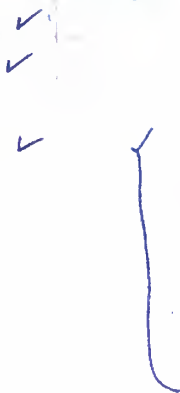




62

9141 - *Spiranthes* (~~peruviana~~) (<sup>*magnicarpa*</sup>) - 14 Sep 74 - in bog on west side of US 85 about 1 mile south of the railroad overpass just south of Isleta - elevation 1500 meters - about 50 plants seen  
SE 1/4, Sec 27, T8N, R2E

7 Sep 74 Next deep canyon S of Dog Canyon - *Lobelia cardinalis*, *Aster*, *Parityle stamophylla*, *Samolus cuneatus*, tall in bloom - Plants of *Epipactis* in fruit - Peculiar



63

64

65

May 75

55241 *Psathyrotes scaposa* - side of railroad cut on NE side of Cerro Maleros (Mt. Christo Rey) - S end of Dona Ana County - Elev <sup>1200 m</sup> 1200 m. - limestone gravels.

May 75 - Shalam hills

55251 *Tetradlea coalteri* - NE facing hillside in limestone crevice

55252 *Polygala microchima* - SE limestone hillside

55253 *Eriogonum* - NE facing hillside in grasses

55254 *Hedeoma pinnatifida* - " " " "

6 May 75 - San Andres Mtns near Dog Canyon R2E T13S

55261 *Tatiana brevifolium* - Sec 4 on rocky hillside (limestone) 6700'

55262 *Rosa stolonata* - a" over.

55263 *Phlox nana* - all W4

55264 *Astragalus pictiformis* - Sec 4 - flat pastureland @ 6600'

55265 *Eriogonum alatum*

55266 *Eriogonum trichosperum*





66

- 26 May 75 (cont)
- ✓ 55267 *Evolvulus* ~~*alsinoides*~~ *alsinoides* var. *angustifolia*
  - ✓ 55268 *Lycium pallidum*
  - ✓ 55269 *Salvia henryi*
  - ✓ 552610 *Allium*
  - ✓ 552611 ~~*Adiantum*~~ *Pseudocymopterus montan*
  - ✓ 552612 *Castilleja integr*
  - ✓ 552613 *Oenothera* *occidentale*
  - ✓ 552614 *Scutellaria*
  - ✓ 552615 *Hedeoma*
  - ✓ 552616 *Gymnomoxys*
  - ✓ 552617 *Thymus* *glauca*
  - ✓ 552618 *Heuchera* *probably versicolor*

67

- open flat meadows - Sect 6700'
- Open canyon bottoms + ridges - Sec 4, Sec 9 6600'-7200'
- Canyon bottoms - Sec 4, Sec 9 6800'-7200'
- not yet in bloom - Sec 4, Sec 9, Sec 10
- hillsides Sec 4, Sec 9
- Ridge under Pinyon-Juniper Sec 10 7400'
- Canyon bottom in wash Sec 4 6600'
- Ridge among limestone Sec 9 7300'
- Meadows, hillsides, ridges Sec 4, Sec 9, Sec 10
- Woods Sec 4 6600'
- Woods, not stems
- or *leptanthera* Sec 9 <sup>Eastern</sup> Cliff face @ 7300'

16 May 75 68

- Mesa 5 mi S of Bloom field beside Hwy 49
- Gilia*
  - Gilia* *Phlox*
  - Asclepias* *tridentata*
  - Castilleja* *linearifolia*?
  - Streptanthus* *longirostris*?
  - Amelanchier* *pyramidalis*?
  - Astragalus* *onchocarpus* (*amphioxys*?)

69

23 May 75

- Great Canyon Dam
- Lupinus*
  - Opuntia*
  - Astragalus* *amphioxys*?

22 Jun 75

- Paganum *harmala* - 1.8 mi. W. of Las Cruces Airport entrance on shoulder of old highway - these are the first plants I have seen in D.A. County except at water tanks
- Alfalfa* in bloom (these plants only)
  - Linum* *aristatum* *Gilia* *longifolia*
  - Nema* *hispida*, *Viguiera*, *Senecio*
  - Dalea* *pogonathena*, *Baileya* *multiradiata*





70

Sep 75 - Long Canyon Box just above Falls  
Peristyle cornua and Peristyle coronopis siliqua growing intermixed! Only such  
occurrence I have seen. Siliqua plunkii mostly finished blooming.

- 961 - Eupatorium greggii - among grass and rocks  
 962 - Perityle coronopifolia - on cliff & boulders  
 963 - Stachys coccinea - in box under oaks.  
 964 - Composite or amarantifl. - rock crevice - Trisium heterophylla?  
 965 - Machoesanthus  
 966 - Composite  
 967 - Agastache cana - cliffs abn. long Canyon west side @ 6500' NW 1/4, Sec 6  
 968 - Perityle cornua - " " " " " " " " " "  
 969 → only a half dozen plants seen - also many more Silene, plantaginifolia  
 9610 Bidens - upper long Canyon bottom  
 9611 Talinopsis frutescens - 2nd canyon west of long Canyon - NW 1/4, Sec 7, T24S, R4E - 5500'

71

72

73

12 Aug 76

- NORTH OF MOCKINGBIRD GAP

~~PARAFRETES~~ PSILOSTROPITE

Linum

*Oenothera runcinata?*

- RANGE ROAD 8, 16 MI. W OF OSCURO,  
SOUTH FOOTHILLS OF OSCURO MTS

VERBENA

- MALPAIS SPRING

EUSTOMA

ALLIANCE.

Limnism

Sampul

ZANNICHELLA?

- CA 1 MI S OF MALPAIS SPRING ALONG  
ROADSIDE (RANGE ROAD 9)

FRANKENIA

Cosium. 24.000000

510194 *Letya. kuroshii*

10195 *Psittale stomatophylla*

70196 ? 0 Burge?

70197 Phoscelian

10178 Mint - giving approval to  
slipits = Silvia surname



75

- Buisson Canyon - between two large springs just above junction of Rio Puerco - mid坡 of Cañabonina (*C. flexuosa* or *willdenowii*) and plants of *Plethranthus* *crinitifolia*.
- At junction of Forest Road 433 and 437 in Sec. 11 R12E, T18S at abt 9300 ft under spruce: plants of *Goodenra* not in bloom. In same area in cotton spruce - *Zigadenus elegans* (760821-1)
- On Forest Rd 64 just north of junction with Russia Canyon Road
- *Cirsium palachthum* (760821-2)

77

Small rocks. 1st hole in empty sap - *Brachymeria concolor*,  
1st hole in sap, 1st hole in wood, 1st hole in  
moss. *Brachymeria* sp., *Brachymeria* sp., *Brachymeria* sp.,  
1st hole in sap, 1st hole in wood.

Indian Creek *Lonicera dumosa*, ~~Graph~~ *Symphoricarpos* sp., *Eriogonum* sp.,  
*Echinocereus triglochidiatus* - bluish phase,  
 On Animas Peak *Senecio robustus*, *Senecio* sp., *Arenaria* ~~and~~ *var. muricata*?  
*Lonicera arizonica*, *Rhynchospora*, *Antennaria* sp., *Thermopsis*?  
 Aspen, *Castilleja* sp., ~~at~~ *Linnaea glomerata*  
 Everything terribly dry!

- ✓ NE side of Black Mountain, San Andres, SW 1/4 Sec 32, T26S, R55E, 1550m.
- ✓ On vertical strictly N facing cliff, 40 plants of *Polygala rufida* var. *mesolepis* var. *mesolepis*
- ✓ In canyon bottoms in rock crevices, *Tristemonia laevis*, 4 different canyons,
- ✓ few plants @ any location, already in fruit.
- ✓ *Texmenia* just beginning to bloom
- ✓ *Philadelphus* like Ash Canyon and Dog Canyon more like Ernest, than
- ✓ *Mezmaia*, already in flower. In three of 4 canyons







78

5-Jun 77 (continued)

- ✓ *Perityle stansophylla stansophylla* in full bloom, quite a bit in each canyon.
- ✓ Cast. Neja ca. 8 dm tall in arroyo.

79

21 Aug 77 Most plants collected were in a narrow steep canyon on the north face of North Organ Needle from 7000 - 8000'.  
 Evergreens mostly Douglas, other trees mostly Gambel oak and *Acacia grandidentata*. Soil was damp although there was little moisture lower down. Bare rock showed *Pinnula*, *Perityle cormopifolia*, *Silene laevigata*, *Sedum*, *Salvinella*, etc. Steep boulder slopes had *Pericoma candelata*, *Urtica*, *Scrophularia laevis* (this canyon had the largest population I've seen - none heavy, but scattered up and down the canyon).  
 Other things in bloom - *Oxalis*, *Heuchera leptanthera*, *Maianthemum*, *Arenaria*,  
 Canyon is in SE 1/4, Sec 31 and SW 1/4, Sec 32, R 4E, T 22S

80

4 Sep 77

Hike to Winn Falls from Herb Martyr Campground

Just above campground on open southeast facing hillside with oak -

*Milla biflora* -*Brachygloma* -On way up - *Salvia lemniscata*,*Stachys coccinea*, ~~Pa~~*Tridactmia* sp. was in pocket on open seep face, south east facing.At Falls - *Pinus pappas*?, *Eriogon*,*Adiantum petatum*, *Mimulus**cardinalis*, *Pericoma candelata*,*Eupatorium*, *Brickellia*,*Rubus*, *Veratrum*, *Cornus stolonifera*,*Aquilegia tritermista*, *Thalictrum* sp.*Heuchera sanguinea*, another*Heuchera* sp.

81

3 June 78

Walked up Little Creek from the Grila. A steady 2 hrs to the

Little Creek Box seep area. *Penstemon pseudospectabilis* in bloom all along.In seep 50-100 *Cyp. calceolus* var. pubescens (dwarf form) in bloom.Also in bloom *Viola nephrophylla* var.*arizonica*, *Senecio quercus*, *puspusculus*?*Rubus parviflorus*, *Aquilegia chrysantha*.Saw an *Ag. tritermista* beside stream.*Platanthera* in seep so thick in places

no grass was growing - but not in bloom

yet. Things were really dry though

the stream was running nicely.

11 Jun 78

Went up to Little Creek again to look for my lost lens. Went the mesa route.

Very dry. A few *Penstemon barbatus*and one *Eriogon*. 3 hrs to seep house





82

I went around west side of hill and came down above box so had to climb back out. Cyp. calceolus almost gone. Plectanthera sparsiflora (some huge plants) now with half spikes in bloom. Zigadenus virescens with flower stalks up but not developed. Viola nephrophylla, Aquilegia chrysantha, Rubus paviflorus still blooming. Acemita californicum just beginning as was Saxifraga arguta. 2 hrs. to go back along east side of hill. Temp. in high 90's. Mimulus guttatus, watercress, also in bloom at seep.

83

6 Jun 78  
Erythrina flabelliformis in Texas Canyon  
Walked up above Wife H Ranch in Ramsey Canyon, Shoshone Mtns  
Philadelphus microphyllus var. stramineus?  
Bouvardia glaberrima  
Noted Arbutus arizonica past bloom  
Perityle coronopifolia not in bloom  
Hexalepis!! almost in bloom  
just below cliffs that have golden eagle nest.  
17 Jun 78 up Ramsey Canyon onto Forest Service land.  
Lilium Perryi in Box canyon  
Stachys linearis along stream just beginning  
Corethrospiza wislizeni on Forest land long past (in fruit)

84

18 Jun - Went up Carr Canyon (next south of Ramsey)  
Erythrina flabelliformis along road. Jatropha macrocarpa also under oaks. Went up to granite cliff face - only Perityle coronopifolia.  
Aquilegia chrysantha past bloom. Penstemon barbatus var. blooming. Dalea oridalis? also.  
Everything very dry.

14 Jun 78 - Up east side of Cook's Range to see Arizona cypress stand. No Perityle on east facing limestone cliffs. On way up saw Penstemon ramosus and Hymenoxys quinquesquamata, both characteristic of SE AZ and further showing the affinity

85

of Cook's Range with AZ.  
Also in bloom Hymenoxys radiatus  
Ptelea in fruit

18 Jul 78 - Grandditch area & Forest  
Lythrum californicum  
Epilobium sp. fruticulosum  
Penstemon - 2 sp.  
Agrostis rupestris  
Mentha spicata  
Pomella vulgaris  
Pellaea limifolia  
Loiseleuria pulchella?  
Perityle coronopifolia  
Hypericum sp.





86

21 Jul 78 Range & Peaky Hill  
*Escobaria* ~~scabra~~ *serotina* var.  
 a ~~small~~ fruit, not yet ripe. Back again  
 in August. Also saw the following:  
*Heisteria scabra* var. *scabra*  
*Zinnia grandiflora*  
*Perezia wrightii*  
*Trixis*  
*Stephanomeria*  
*Hottelroseggia*

Found *Pentstemon lanceolatus* both  
 in Grays & in the *Escobaria*. Apparently  
 currently accepted, i.e. that is  
*Pentstemon lanceolatus* = *P. lanceolatus*  
 = *P. pauciflorus* Greene  
 See Crosswicks, Sida 1, 266, 1966.

87

29-30 Jul 78

Went to SW Corner to check  
 on *Hexalepis* in Animas Mts w/  
 Andy. Given way lay by Mrs. Burris  
 so didn't take time to get in. Went  
 to Green Ranch and west on Green  
 property to Sec 8, R 21W, T 33S.  
 Walked toward Guadalupe Spring across  
 into what would be Sec 12, R 22W, T 33S.  
 In Sec 12 collected *Pitcairnia undosa* in  
 tank. Also collected 4 fls in Sec 7  
 including what appears to be *Cheilanthes*  
*wrightii*. Also in Sec 7, *Pentstemon*  
*linarioides*. Very little in bloom.  
 Crossed Greenhorn Trail & camped  
 on Cottonwood Creek @ Miller Spring.  
 Walked up right fork (South) past  
 Silvertip Mine into N. Mex. Everything  
 dry but not starting a little.  
 Then went to Rosewood Hills on

88

Guadalupe Canyon Road (AZ, Sec 1,  
 R 31E, T 24S). Found  
*Amorcania*, *Physalis* *twedyi*,  
*P. macradunia*, *Arabis coulteri*,  
*Mammillaria* sp., in bloom.  
 New *heisteri*-like *Mammillaria* not  
 in bloom - Andy found 4 more.  
*Jatropha macrocarpa* also in bloom,  
 subseal moist.

31 Aug 78 Plants seen above HTH  
 @ South end of San Andres at Bear  
 Peak. *Juniperus deppeana* & *monosperma*  
*Berberis* \_\_\_\_\_, *Pinus edulis*, *Quercus*,  
*Coryphantha* (*Escobaria*?), *Mammillaria* *heisteri*,  
*Echinocactus intextus* & *wislizeni*,  
*Echinocereus triglochidiatus*, & *chihuensis*,  
*Cylindropuntia* (*Cholla* & *Prickly*) *virginiana*,  
*Helianthemum* *fendleriella*, *Stephanomeria*,  
*Eriogonum* (two species, at least)

89

*Mimosa*, *Arctostaphylos*? *Cholla*,  
*Gravaya*, *Trixis*, *Croton*, *Euphorbia*,  
*Sedum*, *Salvia*, *Cudalia*?

Everything extremely dry - most  
 forbs and grasses brown & withered.  
 Perennials & shrubs primarily green  
 things.

14 Aug Rhodes Canyon  
 Mtn due S of Hardin Ranch  
 38° 33.2 Miles  
 Rhodes Canyon Range (3887 ft)  
 Noted in bloom along Rhodes Canyon  
 Road *Zinnia grandiflora*, *Psilostrophe* *sp.*  
*Yucca aggregata*, *Cirsium* sp.,  
 On sheer NE cliff face @ 7400 in  
 Sec 34, R 2E, T 12S - *Petrophytum* *cecropium*  
*Perityle taurophylla*, white *blastodermis*  
 on white mountainside down to road.







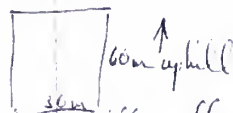
90

was *Scutellaria tessellata* (Crescent?)  
also, particularly under pines was  
*Thymoxys* sp., - noted an  
indefinite *Thymoxys* *radialis*,  
a few *Ipomopsis aggregata*, *Suaeda* sp.,  
*Polygala* sp., *Gutierrezia* sp.,  
By road *Penstemon jamesii*, *Houstonia* sp.  
in shaded narrow draw at 6800 ft  
on NE slope, a suffrutescent mint  
or figwort I never seen before.  
Also on slope 2 sp *Chrysothamnus*,  
*Solidago* sp., *Brickellia* sp.,  
*Aster* sp.

This is the same *Hedeoma*  
habitat - north facing gypsaceous  
limestone slope w/ pinyon, juniper,  
scrub oak, *Cercocarpus greggii*, ca 1900  
in Sec. 34, T12S, R2E,  
Returned to location 18 Aug 78 - found  
on single hill - not on 5 similar hills

91

close by - may be up higher - since some  
above by in seed apparently blooms at  
least as early as July & possibly in  
May - probably related to rainfall.  
Obtained a *Castilleja* on same hillside  
4 sp - returned to location, very few  
blooms - saw a hummingbird at the  
site but not at the flowers. Again  
surveyed site. Plants cut off sharply  
on all four sides. Site probably  
abandoned



Went to next hill south - no  
plants.

In meadow by Rhodes Canyon Rd to fork.  
*Salvia* - *sabine* sp., *Euphorbia dentata*  
*Sauvita* *aberti* -  
Among rocks under cave shelter on mouth

92

of Cottonwood Canyon - *Polygala*  
*scapanoides*?  
Along Range Road 7 south of  
crystal beds - *Solidago*  
Also in meadow near Rio House  
Spring, Berlandiera & Yucca *El Estero*  
in Rhodes Canyon bottom a *Petalostemon*  
*Stephanomeria* *pauciflora* *Wrightiophyllum*

15 Oct 78 - returned to *Hedeoma* site to  
gather seed. Found 12 seed in  
ca 100 calyxes, one had two, the  
others one. Apparently seed set very  
poor. Calyx leathery, tough, with no  
room for developing seed which may  
limit number that develop. No blooms  
at this time.

Went to side of Gyp Hills -  
found *Santaliella florivalis*, a *Hedeoma*  
probably same, *Antitachia* (*perennis*?)

93

24 Nov 78 Long Canyon

Found many plants of *Perityle ceras*  
in next small canyon west of Long  
Canyon Box - only on strictly east and  
north vertical cliffs or below overhangs.  
Water running in Long Canyon intermittent  
above Box and over falls - also in  
canyon west of Box where there  
was *Mimulus* in bloom plus *Bresner*  
Found *Perityle coronopifolia* widespread  
& still a few blooms, *Agastache cune*  
in Box w/ a few blooms *Perezia wrighti*  
still blooming, several *Eriogonum*,  
many *Mammillaria guayana* in fruit.  
*Erythronium* still blooming,  
*Lepidium nudum* var. *duclift* in Box  
*Nicotiana* growing and blooming.  
*Phacelia* (peper?) blooming  
*Brickellia venosa* (var. *wootni*?)  
*Thymoxys* sp.  
*Othocarpus*







94

4 Mar 79 - Next hill S of Quartzite Mtn,  
San Andres - small stream in bottom  
between two hills - very little in bloom -  
*Corydalis aurea*, *Streptanthus* sp.,  
*Draba cuneata* var. *cuneata*,  
*Thamnosma texana*, *Phacelia cuneata*,  
*Thlas microphylla*, *Ephedra*,  
*Lesquerella*?, *Cryptantha* sp.,  
*Astragalus nuttallianus*, *Discaria*  
sp.  
- noted *Eschscholtzia mexicana*  
in bloom in Organ Cane Canyon  
north of here.

9 Mar 79 - Sec 17, T20S, R3E  
1 km E of Taylor Well at  
WILR Boundary. *Selenia dissecta*  
in large numbers

95

28 Mar 79 - Mesa north of Goat  
Mtn - *Oenothera albicollis*, *Oenothera*  
*chamaejasmeoides*, *Draba unifolia*,  
*Gilia flavescens*, *Discaria* sp.,  
*Nama hispida*, *Galium proliferum*,  
*Astragalus nuttallianus*, *Sium* sp.,  
*Ligularia*

East foothills of Goat Mtn, all  
of above plus *Lepidium*  
*Eschscholtzia mexicana*, *Erodium*  
*texanum* (just blooming), *Echinocereus*  
*triglochin* (just beginning),  
*Draba* sp., *Chrysothrix* sp.,  
*Microseris*, *Dalea formosa*  
(just starting), *Eucrypta*  
*micrantha*, *Phacelia cuneata*,  
*Lupinus caninus*, *Lotus* sp., *Trifolium* sp.,  
*Astragalus nuttallianus*, *Hedysarum* sp.

96

13 Apr 79 - Went out by Taylor Well to  
Ash Canyon. *Selenia dissecta* scattered  
from WILR boundary to Middle Well.  
At Middle Well, *Townsendia* and  
*Gilia* (*Eriastrum*?). On hillside,  
east facing, above Ash Canyon,  
*Astragalus castorei* and *Castilleja*  
*sessilis* flora beginning. On west  
facing hillside above Springs, *Artemisia*  
*trifida* still with a few blooms.  
*Leavenworthia* just beginning.  
*Agave chrysantha* just starting.  
*Eriogonum*, *Chenopodium*, *Lesquerella*  
*goudotii*, *Draba* through,  
*Lepidium* sp. beginning. There  
are three Arizona cypress at  
Ash Canyon spring, the largest  
about 15" dbh. *Chorizanthe*  
just starting. There is no  
water this year. The maiden

97

fern is starting to come back from  
the bad freeze two years ago.

*Streptanthus* all over.

*Hordeum sinuatum* and *Chenopodium*  
*villosa* also. *Philadelphus*  
*erectus* not yet in bloom. *Eriogonum*  
just starting out.

6/3/79 - Went into Organ - Achenbach  
to Soledad to North Canyon &  
return - In bloom *Asclepias speciosa*,  
*Verbena wrightii* (new), *Eriogonum* sp.,  
*Dalea* sp., *Delphinium viridescens*,  
*Gomphrena* sp., *Haplopappus spiculatus*  
var., *Penstemon fendleri* (last),  
*Penstemon linarioides* (early), *Eschscholtzia*  
*mexicana* (late), *Polygala Tweedyi*,  
*Oenothera organensis* (North Canyon),  
*Malacothrix* sp., *Staphanomeria* sp.,  
*Androsace* sp., *Schizanthus* sp., *Euphorbia*  
sp., *Hebe* sp., *Manisuris* sp.





98

- looked for aspen in North Canyon  
but didn't find them. -

10 Jun 79 Salinas Pl  
Rosa stellata, Erysimum,  
Linum lewisii, Linum australe,  
Thymus pappus radiatus, Fendlera,  
Ptelea, Escobaria sp. Echinocereus  
triglochinifolius, Nicotiana glauca  
var. robusta, Eriogonum sp. spinulosus  
filiforme, Salvia texana,  
Mentzelia laevis, Ptilostemum  
puberulum, Eriogonum sp. spinulosus  
filiforme, Echinocereus horridulus (n.b.)  
Salvia heugii,  
Clematis  
10

New Sp.

-Pdsite

Plantanus polygonoides, Erigeron modestus

Sanicula novomexicana var. novomexicana  
Sanicula novomexicana  
occidentalis

99

Castilleja integrifolia

jamesii  
var. setosa

Jul 79  
Hexalepis spicata - bloom spikes  
in bud up lat arroyo to S of S. N.  
in Clinocarpus pinetorum  
week later another for radiatus  
and withered on 27 July, third  
spike also starting to bud up w/c  
beginning. The almost 2" of rain  
the first part of June probably  
caused spikes - lack of later rain  
caused lack of blooming.

Jul 79 - in to E side of San  
Andres Peak from SW 30 station.  
Everything dry though a few scirps  
on broad granite flats & ventrals.  
Lithrum californicum in some scaps.  
Tahoeasis frutescens seems in better  
condition. Stenophylla high in grass  
Perezia wrightii, Castilleja integrifolia, Comelina erecta  
monticola, Eriogonum sp. spinulosus  
filiforme, Echinocereus horridulus (n.b.)

100

mostly Brushy Canyon

30 July 79 - spent two hours at  
Dioscorus Ranch looking for *Hexalepis*  
no luck - very little in bloom (*Erysimum*,  
*Mimulus aurantiacus* flowers, *Yucca schottii*,  
*Lesquerella purpurea*).

Picked up *Salicaria rupicola* on  
ridge between Ranch Rd and Brushy  
Canyon.

20 Aug 79

WSMR Range Rd 7 at Rd to SW 30

*Eriogonum rotundifolium*, *Ipsopsis*  
*longiflora*, *Lepidium virginianum* var  
medium

Canyon just south of Skillet Knob  
*Peristyle stenophylla* var. *homoiflora* still in bloom  
*Salvia pinguifolia* just beginning  
*Cirsium perennans*, *Polarisia* ssp. *trachysperma*  
*Lesquerella purpurea* just beginning  
*Mentzelia multiflora* (n.b.)  
*Linum lewisii* incans, *Stephanomeria*  
*panthera*

101

*Thelypodium wrightii*, *Comelina erecta*  
on argutifolia, *Alyxia wrightii* just  
beginning to bloom, *Eriogonum sp. spinulosus*  
*Eriogonum jamesii*, *Heterotheca villosa* (n.b.)  
*Galium rotundifolium*, *Fendlera*, *Salvia integrifolia*  
*Viguiera cordifolia*

Hill just north of Bear Canyon

*Tamias gracilis*, *Macdougallia* *sancti*  
*Macdougallia* *seabra* (*Thelypodium*  
*spinulosus* ssp. *scabrellata*), *Paronychia jamesii*,  
*Artemisia incana*, *Artemisia arizonica*,  
*Dalea nana* var. *nana* (actually *serotina*  
*intermedia* but no *serotina*),  
*Fendlera utahensis*, *Croton pottii*  
(*Eriogonum* *bulbosus*), *Euphorbia fendleri*  
var. *chaetocalyx*, *Aphrostegia ramosissima*,  
*Notoloma sinuata* var. *cochiseensis*, *Tecoma*  
*stans*,





102

29 Aug 79

Jornada Range Road  
*Cesalpinia Jamesii*, *Dalea*  
*swartzii*, *Kalifornica parviflora*,  
*Palafoxia*, *Grillardia Dittysae*,  
*Psilostrophe*, *Zinnia grandiflora*,  
*Lepidium virginicum* var *medium*,  
*Croton*, *Bartleya*,

103

30 Aug 79

Engle Gate - Three Canyon  
*Eriogonum multiflorum*, *Hedeoma*  
*brammundii*, *Gilia rigida* acro,  
*Solanum rostratum*, *Gestifera integrifolia*,  
*Polygala alba*, *Psilostrophe*, *Viguiera*  
*panopsis aggregata*, *Salvia leucostachya*,  
*Asclepias subverticillata*,  
*Ceanothus cuneatus*, *Sphaeralcea*

104

2 Sep 79

hillsides above (north) of Hg. Ranch  
*Stachys coccinea*, *Trichostema arizonicum*,  
*Hedeoma oblongifolium*, *Penstemon*  
*linarioides*, *Elytaria integrifolia*,  
*Trachostema pinnatifidum*, *Polygala*  
*tweedyi*, *Stephanomeria pauciflora*,  
*Cyperus rotundus*, *Chenopodium* sp.,  
*Croton corymbulosus* (all over)

105

10 Jun 81

L. LC 0615 180455

for Eudot Ad 500 104580610

Collected *Erigeron* n. sp. on S-facing  
 rhyolite cliffs in SW 28, T15S R10W!  
 just above bed of Diamond Creek  
 probably < 100 plants.  
 Cliffs are tall, white to pink w/  
 columns.





106

30 June 81  
 Phelps Canyon Tank - 81288.55  
 Granite Gap - 81264.0  
 R.C. Pung Camp - 81275.3  
 Collected buds of Hedeoma  
lanceum at type locality.  
 Collected buds of the undescribed  
 var. homiflora of Perityle stenophylla  
 at Granite Gap, the best locality  
 that the variety was found along  
 w/ a voucher specimen.  
 Went to Three Rivers Campground  
 and walked up Three Rivers  
 Trail past 1st two crossings.  
 Returned because of threatening  
 rain - got soaked. Collected  
Tolimonium filicinum and  
Achillea borealis? or linaria?

107

26 Jul 81  
 L.C. 0500 81880  
 @ Hwy 52 81878.8  
 Winston 81889.2  
 Chloride Creek 913.2  
 Collected Melilotus, Plantago major,  
 composite, Geranium erosa philum.  
 At 913.3 collected Phacelia rufepetris  
Munida austromontana and a small  
 mustard.  
 At 913.4 and 913.55 collected  
Mammillaria heideri, mustard, composite.  
 Inside canyon at 913.7 collected  
Suaeda, Eupatorium, Thalictrum  
tenderi.  
 At 916 in wet areas collected  
Epilobium aduncum and Rorippa  
sphaerocarpa?  
 Winston 81923.7  
 Las Cruces 1600 - 82033.4.





## A Comparison of the Mosses Known and Reported for New Mexico with Flora North America, and a Current Catalog of the Mosses of New Mexico

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The recent completion of the two volumes of Flora North America that deal with the mosses (BFNA27-2007; BFNA28-2014) allows for a fuller accounting of the moss flora of New Mexico. I enumerate, first, mosses new to New Mexico as recorded in BFNA28 in 2014. (New records from BFNA27-2007, have already been incorporated into our list.) Second, I list, with references, moss species that were reported for New Mexico prior to 2007, but were not included in BFNA27-2007. Third, I list, with references, moss species that were reported for New Mexico prior to 2014, but were not included in BFNA28-2014. Fourth, I itemize mosses that were not recorded for New Mexico in BFNA27-2007, but have been found and reported for the state since the publication of that volume. Lastly, an up-to-date catalog of the mosses of New Mexico is provided, with validating references.

### I. New Records for New Mexico from BFNA28-2014

1. *Bartramia stricta* Bridel
2. *Brachymenium macrocarpum* Cardot : This validates that our material is not *Brachymenium klotzschii* as reported in Conard & Redfearn (1979)
3. *Bryum argenteum* Hedwig var. *muticum* Bridel
4. *Entodon beyrichii* Schwägrichen
5. *Gemmabryum demaretianum* (Arts) J.R. Spence
6. *Gemmabryum exile* (Dozy & Molkenboer) J.R. Spence & H.P. Ramsay
7. *Gemmabryum kunzei* (Hornschuch) J.R. Spence
8. *Hygrohypnum bestii* (Renauld & Bryhn) Holzinger
9. *Hygrohypnum duriusculum* (DeNotaris) D.W. Jamieson
10. *Pohlia bolanderi* (Sullivant) Brotherus

### II. Reported for New Mexico Prior to 2007, but not recorded in BFNA27-2007

1. *Andreaea heinemannii* Hampe & Müller Hal. [Mahler 1985]
2. *Bryoerythrophyllum recurvirostrum* (Hedwig) Chen [Bartram 1931; Mahler 1978]
3. *Dichodontium pellucidum* (Hedwig) Schimper [Allred et al. 1998]

4. *Dicranella varia* (Hedwig) Schimper [Ireland et al. 1981]
5. *Dicranoweissia cirrata* (Hedwig) Lindberg ex Milde [Mahler 1978]
6. *Didymodon rigidulus* Hedwig var. *icmadophilus* (Müller Hal.) Zander [Allred et al. 1998]
7. *Ditrichum flexicaule* (Schwägrichen) Hampe [Allred et al. 1998]
8. *Encalypta rhaptocarpa* Schwägrichen [Conard & Redfearn 1979]
9. *Funaria apiculatopilosa* Cardot [Worthington 1996]
10. *Funaria hygrometrica* Hedwig var. *calvescens* (Schwägrichen) Montagne [Darigo & Allred 2001]
11. *Funaria muhlenbergii* Turner [Stark & Castetter 1982]
12. *Grimmia elatior* Bruch ex Balsamo-Crivelli & De Notaris [Darigo & Allred 2001]
13. *Grimmia orbicularis* Bruch ex Wilson [Mahler 1978]
14. *Schistidium ambiguum* Sullivant [Sullivant 1849]
15. *Lorentziella imbricata* (Mitten) Brotherus [Allred et al. 1998]
16. *Microbryum starkeanum* (Hedwig) R.H. Zander var. *starkeanum* [Ireland et al. 1981]
17. *Physcomitrium pyriforme* (Hedwig) Hampe [Ireland et al. 1984]
18. *Polytrichastrum sexangulare* (Bridel) G.L. Smith [Mahler 1978]
19. *Saelania glaucescens* (Hedwig) Brotherus [Bartram 1931; Mahler 1978]
20. *Sphagnum fimbriatum* [Coop 2002]
21. *Tetraphis pellucida* Hedwig [Allred et al. 1998]
22. *Tortella humilis* (Hedwig) Jennings [Ireland et al. 1981]
23. *Tortula brevipes* (Lesquereux) Brotherus [Allred et al. 1998]
24. *Tortula cernua* (Hübner) Lindberg [Crum & Anderson 1981]
25. *Tortula protobryoides* R.H. Zander [Allred et al. 1998]
26. *Trichostomum brachydontium* Bruch [Ireland et al. 1984]
27. *Trichostomum tenuirostre* (Hooker & Taylor) Lindberg [Ireland et al. 1984]

(Continued on page 2)

Botanice est Scientia Naturalis quae Vegetabilium cognitioem tradit.

— Linnaeus





(Continued from page 1)

III. Reported for New Mexico Prior to 2014,  
but not recorded in BFNA28-2014

1. *Anomodon julaceum* [Allred 2012]
2. *Atrichum tenellum* (Röhling) Bruch & Schimper [Romig & Allred 2013]
3. *Bartrania ithyphylla* [Bartram 1931; Mahler 1978]
4. *Brachythecium acuminatum* [Bartram 1931; Mahler 1978]
5. *Brachythecium albicans* [Stark & Castetter 1982]
6. *Campylophyllum hispidulum* [Bartram 1931; Mahler 1978]
7. *Campylophyllum hispidulum* [Bartram 1931; Mahler 1978]
8. *Dicranum tauricum* Sappégin [Romig & Allred 2013]
9. *Drepanocladus longifolius* [Allred 2012]
10. *Entodon seductrix* [Blisard & Kleinman 2012]
11. *Fabronia pusilla* [Mahler 1978]
12. *Gemmabryum dichotomum* [Allred et al. 1998]
13. *Homomallium incurvatum* [Allred 2012]
14. *Hygrohypnum ochraceum* [Mahler 1985]
15. *Hylocomium splendens* [Bartram 1931; Mahler 1978]
16. *Hypnum pratense* [Allred et al. 1998]
17. *Imbriobryum minutum* [Stark & Castetter 1982]
18. *Isopterygium tenerum* [Allred et al. 1998]
19. *Lescurea saxicola* [Mahler 1985]
20. *Leskea angustata* [Worthington 2012]
21. *Orthotrichum cupulatum* [Worthington 2012]
22. *Orthotrichum laevigatum* [Allred et al. 1998]
23. *Orthotrichum pallens* Bridel [Romig & Allred 2013]
24. *Oxyrrhynchium hians* [Allred 2012; Conard & Redfearn 1979; Grout 1928-40]
25. *Philonotis capillaris* [Mahler 1978]
26. *Philonotis fontana* (Hedwig) Bridel var. *americana* (Dismier) Flowers ex Crum [Flowers 1973]
27. *Philonotis fontana* (Hedwig) Bridel var. *pumila* (Turner) Bridel [Bartram 1931; Mahler 1978]
28. *Plagiomnium ciliare* [Allred 2012]
29. *Plagiomnium ellipticum* [Allred et al. 1998]
30. *Plagiomnium medium* [Allred 2012]
31. *Plagiomnium rostratum* [Bartram 1931; Mahler 1978]
32. *Platydictya subtilis* [Allred 2012]
33. *Platygyrium repens* [Allred 2012]
34. *Pohlia obtusifolia* [Worthington 2012]
35. *Pseudocampylium radicale* [Mahler 1985]
36. *Pseudoleskea incurvata* [Mahler 1985]
37. *Pseudoleskeella rupestris* [Allred 2011]
38. *Ptychostomum pallescens* [Allred et al. 1998]
39. *Ptychostomum pseudotriquetrum* [Bartram 1931; Mahler 1978]
40. *Ptychostomum turbinatum* [Bartram 1931; Mahler 1978]
41. *Pylaisia selwynii* [Allred 2011]
42. *Rhizomnium magnifolium* [Crum & Anderson 1981]
43. *Rhizomnium pseudopunctatum* [Mahler 1985]
44. *Sciuro-hypnum plumosum* [Mahler 1985]
45. *Sciuro-hypnum populeum* [Bartram 1931; Mahler 1978]
46. *Scleropodium obtusifolium* [Allred 2012]
47. *Sphagnum girgensohnii* Russow [Romig & Allred 2013]
48. *Stereophyllum radiculosum* [Grout 1945; Mahler 1978]
49. *Tortella fragilis* (Hooker & Wilson) Limpricht [Romig &

Allred 2013]

50. *Tortella tortuosa* (Hedwig) Limpricht var. *fragilifolia* (Juratzka) Limpricht [Romig & Allred 2013]
51. *Warnstorfia exannulata* (Hedwig) Loeske [Romig & Allred 2013]
52. *Warnstorfia fluitans* [Price 2011]

IV. Not Recorded in BFNA27-2007, but Reported for New  
Mexico Since the Publication of that Volume

1. *Crumia latifolia* (Kindberg) W.B. Schofield [Kleinman 2012]
2. *Distichium inclinatum* (Hedwig) Bruch & Schimper [Allred 2012]
3. *Ditrichum gracile* (Mitten) Kuntze [Allred 2011]
4. *Grimmia americana* Bartram [Allred 2011]
5. *Grimmia trichophylla* Grev. [Worthington 2011]
6. *Microbryum starckeanum* (Hedwig) R.H. Zander var. *fosbergii* (Bartr.) Zander [Allred 2011]
7. *Ptychomitrium serratum* Bruch & Schimper [Worthington 2011]
8. *Rhabdoweisia crispata* (Dickson ex Withering) Lindberg [Allred 2011]
9. *Schistidium dupretii* (Thériot) W.A. Weber [Allred 2011]
10. *Schistidium viride* H.H. Blom & Darigo [Allred 2011]
11. *Trematodon longicollis* Michaux [Allred 2011]
12. *Tuerckheimia svihlae* (Bartram) Zander [Worthington 2012]
13. *Weissia muhlenbergiana* (Swartz) W.D. Reese & B.A.E. Lemmon [Allred 2011]

Lists II and III comprise 79 taxa that had been reported for New Mexico in the literature, nearly all with validating vouchers, but were not noted in Flora North America as occurring in the state. In a few cases, the identifications in the reports may have been in error; in most cases, the BFNA authors were apparently unaware of the published reports, and did not examine specimens from New Mexico herbaria nor inquire with New Mexico bryologists. Some of these discrepancies, however, can serve as alerts for species needing verification.

The last official accounting of the mosses of New Mexico was 3½ years ago (Allred 2011). Below is presented a current catalog of the mosses of the state, complete with synonyms, index, and literature citations. The number of families has increased from 38 to 41, genera from 130 to 139, species from 302 to 343, and total taxa from 312 to 353.

The catalog of mosses, as well as other pertinent information about the bryophytes of New Mexico, may be found at floraneomexicana.org.

I am pleased to acknowledge the frequent and agreeable assistance of Karen Blisard, Russ Kleinman, and Kirsten Romig in finding and studying the mosses of New Mexico.

(Continued on page 3)







(Continued from page 2)

## MOSSES OF NEW MEXICO – FAMILY LIST

Total families = 41  
Total genera = 139  
Total species = 343  
Total taxa = 353

### Family AMBLYSTEGiaceae

#### Amblystegium

- fluviale* (Hedwig) Bruch, Schimper, & Gumbel = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*humile* (Beauvois) Bruch, Schimper, & Gumbel = *Hygroamblystegium* varium (Hedwig) Mönkemeyer var. *humile* (Beauvois) Vanderpoorten & Hedenäs  
*juratzkanum* = *Amblystegium* serpens (Hedwig) Bruch & Schimper  
*noterophilum* (Sullivant & Lesquereux) Holzinger = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*riparium* (Hedwig) Schimper = *Leptodictyum* riparium (Hedwig) Warnstorf  
*serpens* (Hedwig) Bruch & Schimper var. *juratzkanum* (Schimper) Rau & Hervey = *Amblystegium* serpens (Hedwig) Bruch & Schimper  
*serpens* (Hedwig) Bruch & Schimper [Bartram 1931; Mahler 1978]  
*Amblystegium juratzkanum* Schimper  
*Amblystegium serpens* (Hedwig) Bruch & Schimper var. *juratzkanum* (Schimper) Rau & Hervey  
*tenax* (Hedwig) C. Jensen = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*varium* (Hedwig) Lindberg = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*Calliergon stramineum* (Bridel) Kindberg = *Straminergon* stramineum (Bridel) Hedenäs

#### Campyliadelphus

- chrysophyllus* (Bridel) Kanda [Bartram 1931; Mahler 1978]  
*Campylium chrysophyllum* (Bridel) J. Lange

#### Campylium

- chrysophyllum* (Bridel) J. Lange = *Campyliadelphus* *chrysophyllus* (Bridel) Kanda  
*hispidulum* (Bridel) Mitten = *Campylophyllum* *hispidulum* (Brid.) Hedenäs  
*radicale* (P. Beauvois) Grout = *Pseudocampylium* *radicale* (P. Beauvois) Vanderpoorten & Hedenäs  
*stellatum* (Hedwig) C. Jensen [Conard & Redfearn 1979; Lawton 1971]

#### Campylophyllum

- hispidulum* (Bridel) Hedenäs [Bartram 1931; Mahler 1978]  
*Campylium hispidulum* (Bridel) Mitten

#### Conardia

- compacta* (Müller Hal.) Robinson [Mahler 1978]  
*Rhynchostegiella compacta* (Müller Hal.) Loeske

#### Cratoneuron

- commutatum* of American reports = *Palustriella* *falcata* (Bridel) Hedenäs  
*decipiens* of American reports = *Palustriella* *falcata* (Bridel) Hedenäs  
*filicinum* (Hedwig) Spruce [Bartram 1931; Mahler 1978]

#### Drepanocladus

- aduncus* (Hedwig) Warnstorf [Bartram 1931; Mahler 1978; Wynne 1944]  
*Drepanocladus aduncus* (Hedwig) Warnstorf var. *kneiffii* (Schimper) Mönkemeyer  
*Drepanocladus aduncus* (Hedwig) Warnstorf var. *polycarpus* (Blandow ex Voit) Roth  
*longifolius* (Mitten) Brotherus ex Paris [Allred 2012]  
*aduncus* (Hedwig) Warnstorf var. *kneiffii* (Schimper) Mönkemeyer = *Drepanocladus* *aduncus* (Hedwig) Warnstorf  
*aduncus* (Hedwig) Warnstorf var. *polycarpus* (Blandow ex Voit) Roth = *Drepanocladus* *aduncus* (Hedwig) Warnstorf  
*sendtneri* (Schimper) Warnstorf: this species not yet known from North America [BFNA28]; reported by various authors; our material is referred to *Drepanocladus* *aduncus* (Hedwig)

Warnstorf;

- Drepanocladus sendtneri* (Schimper) Warnstorf var. *wilsonii* fluitans (Hedwig) Warnstorf = *Warnstorfia* fluitans (Hedwig) Loeske  
*sendtneri* var. *wilsonii* = *Drepanocladus* *sendtneri* Warnstorf  
*uncinatus* (Hedwig) Warnstorf = *Sanionia* *uncinata* (Hedwig) Loeske

#### Hygroamblystegium

- fluviale* (Hedwig) Loeske = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*orthocladon* (P. Beauvois) Macoun & Kindberg = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*noterophilum* (Sullivant & Lesquereux in Sullivant) Warnstorf = *Hygroamblystegium* varium (Hedwig) Mönkemeyer Holzinger  
*tenax* (Hedwig) Jennings = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*varium* (Hedwig) Mönkemeyer var. *humile* (Beauvois) Vanderpoorten & Hedenäs [Vanderpoorten 2014]  
*Amblystegium* *humile* (Beauvois) Bruch, Schimper, & Gumbel  
*Leptodictyum* *humile* (P. Beauvois) Ochyra  
*varium* (Hedwig) Mönkemeyer var. *varium* [Bartram 1931; Mahler 1978]  
*Amblystegium* *fluviale* (Hedwig) Bruch, Schimper, & Gumbel  
*Amblystegium* *varium* (Hedwig) Lindberg  
*Hygroamblystegium* *noterophilum* (Sullivant & Lesquereux) Warnstorf  
*Hygroamblystegium* *orthocladon* (P. Beauvois) Macoun & Kindberg  
*Hygroamblystegium* *tenax* (Hedwig) Jennings  
*Leptodictyum* *trichopodium* (Schulz) Warnstorf  
*luridum* (Hedwig) Jennings var. *julaceum* (Schimper) Podpera = *Hygrohypnum* *luridum* (Hedwig) Jennings

#### Hygrohypnum

- bestii* (Renauld & Bryhn) Holzinger [Jamieson 2014]  
*Hypnum* *molle* (Hedwig) Loeske subsp. *bestii* Renauld & Bryhn  
*duriusculum* (DeNotaris) D.W. Jamieson [Jamieson 2014]  
*Limnobia* *duriusculum* DeNotaris  
*luridum* (Hedwig) Jennings [Bartram 1931; Mahler 1978]  
*Hygrohypnum* *luridum* (Hedwig) Jennings var. *julaceum* (Schimper) Podpera  
*molle* (Hedwig) Loeske [Bartram 1931; Mahler 1978] Note: This species is not included for NM in BFNA28, and has been confused with *H. bestii* and *H. duriusculum*; warrants verification.  
*ochraceum* (Turner ex Wilson) Loeske [Mahler 1985]

#### Leptodictyum

- humile* (P. Beauvois) Ochyra = *Hygroamblystegium* varium (Hedwig) Mönkemeyer var. *humile* (Beauvois) Vanderpoorten & Hedenäs  
*riparium* (Hedwig) Warnstorf [Prior 1966]  
*Amblystegium* *riparium* (Hedwig) Schimper  
*trichopodium* (Schulz) Warnstorf = *Hygroamblystegium* varium (Hedwig) Mönkemeyer  
*Limnobia* *duriusculum* DeNotaris = *Hygrohypnum* *duriusculum* (DeNotaris) D.W. Jamieson

#### Palustriella

- falcata* (Bridel) Hedenäs [Allred et al. 1998]  
*Cratoneuron* *commutatum* of North American reports  
*Cratoneuron* *decipiens* of North American reports  
*Palustriella* *commutata* of North American reports  
*Palustriella* *decipiens* of North American reports  
*commutata* of North American reports = *Palustriella* *falcata* (Bridel) Hedenäs  
*decipiens* of North American reports = *Palustriella* *falcata* (Bridel) Hedenäs

#### Platydictya

- jungermannioides* (Bridel) Crum [Mahler 1978]  
*subtilis* (Hedwig) Crum [Allred 2012]

#### Pseudocampylium

- radicale* (P. Beauvois) Vanderpoorten & Hedenäs [Mahler 1985]  
*Campylium* *radicale* (P. Beauvois) Grout

#### Sanionia

(Continued on page 4)





(Continued from page 3)

*uncinata* (Hedwig) Loeske [Bartram 1931; Mahler 1978; Wynne 1944]*Drepanocladus uncinatus* (Hedwig) Warnstorf

Straminergon : go to Calliergonaceae

***Tomentypnum****nitens* (Hedwig) Loeske [Crum & Anderson 1981]

Warnstorfia : go to Calliergonaceae

**Family ANDREAEEACEAE*****Andreaea****heinemannii* Hampe & Müller Hal. [Mahler 1985]*Andreaea rupestris* sensu Mahler (1985)**Family ANOMODONTACEAE*****Anomodon****attenuatus* (Hedwig) Hübener [Bartram 1931; Mahler 1978]*minor* (Hedwig) Fűrnrrohr [Ireland et al. 1984]*rostratus* (Hedwig) Schimper [Bartram 1931; Mahler 1978]**Family AULACOMNIACEAE*****Aulacomnium****palustre* (Hedwig) Schwägrichen [Bartram 1931; Mahler 1978]*Aulacomnium palustre* (Hedwig) Schwägrichen var. *imbricatum* Bruch & Schimper*palustre* (Hedwig) Schwägrichen var. *imbricatum* Bruch & Schimper = *Aulacomnium palustre* (Hedwig) Schwägrichen**Family BARTRAMIACEAE*****Anacolia****laevisphaera* (Taylor) Flowers [Mahler 1978]*Anacolia subsessilis* (Taylor) Brotherus*menziesii* (Turner) Paris [Weber et al. 2003]*subsessilis* (Taylor) Brotherus = *Anacolia laevisphaera* (Taylor) Flowers***Bartramia****brevifolia* Bridel [Allred et al. 1998.]*ithyphylla* Bridel [Bartram 1931; Mahler 1978]*potosica* Montagne [Allred et al. 1998]*stricta* Bridel [Griffin III, D.G. 2014]***Philonotis****capillaris* Lindberg [Mahler 1978] Note : According to BFNA28-2014, this species is associated with an oceanic climate; warrants verification.*fontana* (Hedwig) Bridel var. *americana* (Dismier) Flowers ex Crum [Flowers 1973]*fontana* (Hedwig) Bridel var. *caespitosa* (Juratzka) Schimper [Stark & Castetter 1982]*fontana* (Hedwig) Bridel var. *fontana* [Bartram 1931; Mahler 1978]*fontana* (Hedwig) Bridel var. *pumila* (Turner) Bridel [Bartram 1931; Mahler 1978]*Philonotis tomentella* Molendo*marchica* (Hedwig) Bridel [Bartram 1931; Mahler 1978]*tomentella* Molendo = *Philonotis fontana* (Hedwig) Bridel var. *pumila* (Turner) Bridel**Family BRACHYTHECIACEAE*****Brachythecium****collinum* (Schleicher ex Müller Hal.) Ignatov & Huttunen [Bartram 1931; Mahler 1978]*Brachythecium collinum* (Schleicher ex Müller Hal.) Schimper*Hypnum collinum* Schleicher ex Müller Hal.*fendleri* (Sullivant) Ochyra & Żarnowiec [Bartram 1931; Mahler 1978]*Brachythecium fendleri* (Sullivant) Jaeger*Brachythecium utahense* James*Leskea fendleri* Sullivant*velutinum* (Hedwig) Ignatov & Huttunen [Bartram 1931; Mahler 1978]*Brachythecium velutinum* (Hedwig) Ignatov & Huttunen var.*salicinum* (Schimper) Ochyra & Żarnowiec*Brachythecium petrophilum* R.S. Williams*Brachythecium suberythrorrhizon* Renauld & Cardot*Brachythecium velutinum* (Hedwig) Bruch & Schimper*Brachythecium velutinum* (Hedwig) Bruch & Schimper var. *venustum* (De Notaris) Arcangeli*Hypnum velutinum* Hedwig*velutinum* (Hedwig) Ignatov & Huttunen var. *salicinum* (Schimper) Ochyra & Żarnowiec = *Brachythecium velutinum* (Hedwig) Ignatov & Huttunen***Brachythecium****acuminatum* (Hedwig) Austin [Bartram 1931; Mahler 1978]*Leskea acuminata* Hedwig*albicans* (Hedwig) Schimper [Stark & Castetter 1982]*Hypnum albicans* Hedwig*collinum* (Schleicher ex Müller Hal.) Schimper = *Brachythecium collinum* (Schleicher ex Müller Hal.) Ignatov & Huttunen*digastrum* Muller Hal. ex Kindberg = *Brachythecium laetum* (Bridel) Schimper*erythrorrhizon* Schimper var. *erythrorrhizon* [Bartram 1931; Mahler 1978]*fendleri* (Sullivant) Jaeger = *Brachythecium fendleri* (Sullivant) Ochyra & Żarnowiec*laetum* (Bridel) Schimper [Worthington 1996]*Brachythecium digastrum* Muller Hal. ex Kindberg*Brachythecium oxycladon* (Bridel) Jaeger*Hypnum laetum* Bridel*latifolium* Kindberg = *Sciuro-hypnum latifolium* (Kindberg) Ignatov & Huttunen*nelsonii* Grout = *Sciuro-hypnum latifolium* (Kindberg) Ignatov & Huttunen*oedipodium* (Mitten) Jaeger = *Sciuro-hypnum oedipodium* (Mitten) Ignatov & Huttunen*oxycladon* (Bridel) Jaeger = *Brachythecium laetum* (Bridel) Schimper in B.S.G.*petrophilum* R.S. Williams = *Brachythecium velutinum* (Hedwig) Ignatov & Huttunen*plumosum* (Hedwig) Bruch & Schimper = *Sciuro-hypnum plumosum* (Hedwig) Ignatov & Huttunen*populeum* (Hedwig) Bruch & Schimper = *Sciuro-hypnum populeum* (Hedwig) Ignatov & Huttunen*rivulare* Bruch & Schimper [Bartram 1931; Mahler 1978]*rotaceanum* DeNotaris [Allred 2012]*ruderales* (Bridel) W.R. Buck [Grout 1926; Mahler 1978]*Brachythecium stereopoma* (Spruce ex Mitten) Jaeger*Brachythecium wootonii* Grout*Hypnum ruderales* Bridel*salebrosus* (Weber & Mohr) Bruch & Schimper [Bartram 1931; Lawton 1971; Mahler 1978; 1985]*Hypnum salebrosus* Weber & Mohr*stereopoma* (Spruce ex Mitten) Jaeger = *Brachythecium ruderales* (Bridel) W.R. Buck*suberythrorrhizon* Renauld & Cardot = *Brachythecium velutinum* (Hedwig) Ignatov & Huttunen*utahense* James = *Brachythecium fendleri* (Sullivant) Jaeger*velutinum* (Hedwig) Bruch & Schimper = *Brachythecium velutinum* (Hedwig) Ignatov & Huttunen*wootonii* Grout = *Brachythecium ruderales* (Bridel) W.R. Buck***Eurhynchiastrum****pulchellum* (Hedwig) Ignatov & Huttunen var. *pulchellum* [Bartram 1931; Mahler 1978]*Eurhynchium diversifolium* Schimper*Eurhynchium pulchellum* (Hedwig) Jennings*Hypnum pulchellum* Hedwig*Rhynchostegium pulchellum* (Hedwig) Robinson*Eurhynchium diversifolium* Schimper = *Eurhynchiastrum pulchellum* (Hedwig) Ignatov & Huttunen*hians* (Hedwig) Sande Lacouture = *Oxyrrhynchium hians* (Hedwig) Loeske*pulchellum* (Hedwig) Jennings = *Eurhynchiastrum pulchellum* (Hedwig) Ignatov & Huttunen*praelongum* (Hedwig) Schimper = *Kindbergia praelonga* (Hedwig) Ochyra*Kindbergia praelonga* (Hedwig) Ochyra : Reported tentatively by Worthington (1996), but not by BFNA28; awaits verification

(Continued on page 5)







(Continued from page 4)

*Eurhynchium praelongum* (Hedwig) Schimper  
**Oxyrrhynchium**  
*hians* (Hedwig) Loeske [Allred 2012; Conard & Redfearn 1979; Grout 1928-40]

*Eurhynchium hians* (Hedwig) Sande Lacouture  
*Platyhypnidium aquaticum* (A. Jaeger) M. Fleischer = *Rhynchostegium aquaticum* A. Jaeger  
*Rhynchostegiella compacta* (Müller Hal.) Loeske = *Conardia compacta* (Müller Hal.) Robinson

### **Rhynchostegium**

*aquaticum* A. Jaeger [Allred et al. 1998]  
*Platyhypnidium aquaticum* (A. Jaeger) M. Fleischer  
*Rhynchostegium riparioides* of American authors  
*pulchellum* (Hedwig) Robinson = *Eurhynchiastrium pulchellum* (Hedwig) Ignatov & Huttunen  
*riparioides* of American authors = *Rhynchostegium aquaticum* A. Jaeger  
*serrulatum* (Hedwig) Jaeger & Sauerbeck [Stark & Castetter 1982]  
*Hypnum serrulatum* Hedwig  
*Steerecleus serrulatus* (Hedwig) Robinson

### **Sciuro-hypnum**

*latifolium* (Kindberg) Ignatov & Huttunen [Allred et al. 1998]  
*Brachythecium latifolium* Kindberg  
*Brachythecium nelsonii* Grout  
*oedipodium* (Mitten) Ignatov & Huttunen [Allred et al. 1998]  
*Brachythecium oedipodium* (Mitten) Jaeger  
*plumosum* (Hedwig) Ignatov & Huttunen [Mahler 1985]  
*Brachythecium plumosum* (Hedwig) Bruch & Schimper  
*populeum* (Hedwig) Ignatov & Huttunen [Bartram 1931; Mahler 1978]  
*Brachythecium populeum* (Hedwig) Bruch & Schimper

### **Scleropodium**

*cespitans* (Müller Hal.) Koch : Specimens from NM identified as this have been corrected to *Brachythecium*.  
*obtusifolium* (Mitten) Kindberg [Allred 2012]  
*Steerecleus serrulatus* (Hedwig) Robinson = *Rhynchostegium serrulatum* (Hedwig) Jaeger & Sauerbeck

## **Family BRUCHIACEAE**

### **Trematodon**

*longicollis* Michaux [Allred 2011]

## **Family BRYACEAE**

### **Anomobryum**

*julacenum* (Bridel) Schimper [Allred 2012]

### **Brachymenium**

*vinosulum* Cardot [Spence 2007] = *Plagiobryoides vinosula* (Cardot) J.R. Spence  
*klotzschii* (Schwägrichen) Paris : Reported by Conard & Redfearn (1979) but this species is found in Central and South America.  
*macrocarpum* Cardot [Spence 2014]  
*systylium* (Müller Hal.) Jaeger = *Leptostomopsis systylia* (Müller Hal.) J.R. Spence

### **Bryum**

*affine* Lindberg & Arnell = *Bryum creberrimum* Taylor  
*algovicum* Sendtner ex Müller Hal. = *Ptychostomum pendulum* Hornschuch  
*andicola* Hooker = *Rosulabryum andicola* (Hooker) Ochrya  
*argenteum* Hedwig var. *argenteum* [Bartram 1931; Mahler 1978]  
*argenteum* Hedwig var. *muticum* Bridel [Spence 2014]  
*bicolor* Dickson = *Bryum dichotomum* Hedwig  
*billardieri* Schwägrichen = *Rosulabryum andicola* (Hooker) Ochrya  
*bolanderi* Sullivant = *Pohlia bolanderi* (Sullivant) Brotherus  
*caespitium* Hedwig = *Gemmabryum caespitium* (Hedwig) J.R. Spence  
*capillare* Hedwig = *Rosulabryum capillare* (Hedwig) J.R. Spence  
*creberrimum* Taylor = *Ptychostomum creberrimum* (Taylor) J.R. Spence & H.P. Ramsay  
*cyclophyllum* (Schwägrichen) Bruch & Schimper = *Ptychostomum cyclophyllum* (Schwägrichen) J.R. Spence  
*demaretianum* Arts = *Gemmabryum demaretianum* (Arts) J.R. Spence  
*dichotomum* Hedwig = *Gemmabryum dichotomum* (Hedwig) Spence &

Ramsay

*drummondii* Müller Hal. = *Pohlia drummondii* (Müller Hal.) Andrews  
*exile* Dozy & Molkenboer = *Gemmabryum exile* (Dozy & Molkenboer) J.R. Spence & H.P. Ramsay  
*gemmaiparum* De Notaris = *Imbriobryum gemmaiparum* (De Notaris) J.R. Spence  
*incrassatolimbata* Cardot = *Plagiobryoides incrassatolimbata* (Cardot) J.R. Spence  
*kunzei* Hornschuch = *Gemmabryum kunzei* (Hornschuch) J.R. Spence  
*laevifilum* Syed = *Rosulabryum laevifilum* (Syed) Ochrya  
*lanatum* (P. Beauvois) Bridel [Allred 2011]  
*lisae* De Notaris var. *cuspidatum* (Bruch ex Schimper) Margadant = *Ptychostomum creberrimum* (Taylor) J.R. Spence & H.P. Ramsay  
*lonchocaulon* Müller Hal. = *Ptychostomum lonchocaulon* (Müller Hal.) J.R. Spence  
*miniaturum* Lesquereux = *Imbriobryum miniaturum* (Lesquereux) J.R. Spence  
*muehlenbeckii* Bruch & Schimper = *Imbriobryum muehlenbeckii* (Bruch & Schimper) Pedersen  
*pallens* (Bridel) Swartz = *Ptychostomum pallens* (Bridel) J.R. Spence  
*pallens* Schleicher ex Schwägrichen = *Ptychostomum pallens* (Schleicher ex Schwägrichen) J.R. Spence  
*pendulum* (Hornschuch) Schimper = *Ptychostomum pendulum* Hornschuch  
*pseudotriquetrum* (Hedwig) Gaertner et al. = *Ptychostomum pseudotriquetrum* (Hedwig) J.R. Spence  
*pyriferum* Crundwell & Whitehouse = *Bryum valparaisense* Thériot  
*systylium* Müller Hal. = *Leptostomopsis systylia* (Müller Hal.) J.R. Spence  
*tortifolium* Funck in Bridel = *Bryum cyclophyllum* (Schwägrichen) Bruch & Schimper  
*turbinatum* (Hedwig) Turner = *Ptychostomum turbinatum* (Hedwig) J.R. Spence  
*uliginosum* (Bridel) Bruch & Schimper = *Ptychostomum cernuum* Hornschuch  
*valparaisense* Thériot = *Gemmabryum valparaisense* (Thériot) J.R. Spence

### **Gemmabryum**

*caespitium* (Hedwig) J.R. Spence [Allred et al. 1998]  
*Bryum caespitium* Hedwig  
*demaretianum* (Arts) J.R. Spence [Spence 2014]  
*Bryum demaretianum* Arts  
*dichotomum* (Hedwig) Spence & Ramsay [Allred et al. 1998]  
*Bryum bicolor* Dickson  
*Bryum dichotomum* Hedwig  
*exile* (Dozy & Molkenboer) J.R. Spence & H.P. Ramsay [Spence 2014]  
*Bryum exile* Dozy & Molkenboer  
*kunzei* (Hornschuch) J.R. Spence [Spence 2014]  
*Bryum kunzei* Hornschuch  
*valparaisense* (Thériot) J.R. Spence [Ireland et al. 1981, 1984]  
*Bryum pyriferum* Crundwell & Whitehouse  
*Bryum valparaisense* Thériot

### **Imbriobryum**

*gemmaiparum* (De Notaris) J.R. Spence [Ireland et al. 1981]  
*Bryum gemmaiparum* De Notaris  
*miniaturum* (Lesquereux) J.R. Spence [Stark & Castetter 1982]  
*Bryum miniaturum* Lesquereux  
*muehlenbeckii* (Bruch & Schimper) Pedersen [Ireland et al. 1981]  
*Bryum muehlenbeckii* Bruch & Schimper

Leptobryum : go to Meesiaceae

### **Leptostomopsis**

*systylia* (Müller Hal.) J.R. Spence [Mahler 1978]  
*Brachymenium systylium* (Müller Hal.) Jaeger  
*Bryum systylium* Müller Hal.

### **Plagiobryoides**

*incrassatolimbata* (Cardot) J.R. Spence [Darigo & Allred 2001]  
*Bryum incrassatolimbata* Cardot  
*vinosula* (Cardot) J.R. Spence [Spence 2007]  
*Brachymenium vinosula* Cardo  
Pohlia : go to Mielichhoferiaceae

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(Continued from page 5)

**Ptychostomum**

- cernuum* Hornschuch [Mahler 1978]  
*Bryum uliginosum* (Bridel) Bruch & Schimper  
*creberrimum* (Taylor) J.R. Spence & H.P. Ramsay [Bartram 1931; Mahler 1978]  
*Bryum affine* Lindberg & Arnell  
*Bryum creberrimum* Taylor  
*Bryum lisae* De Notaris var. *cuspidatum* (Bruch ex Schimper) Margadant  
*cyclophyllum* (Schwägrichen) J.R. Spence [Stark & Castetter 1982]  
*Bryum cyclophyllum* (Schwägrichen) Bruch & Schimper  
*Bryum tortifolium* Funck in Bridel  
*lonchocaulon* (Müller Hal.) J.R. Spence [Mahler 1978]  
*Bryum lonchocaulon* Müller Hal.  
*pallens* (Bridel) J.R. Spence [Allred et al. 1998]  
*Bryum pallens* (Bridel) Swartz  
*pallescens* (Schleicher ex Schwägrichen) J.R. Spence [Allred et al. 1998]  
*Bryum pallescens* Schleicher ex Schwägrichen  
*pendulum* Hornschuch [Bartram 1931; Mahler 1978]  
*Bryum pendulum* (Hornschuch) Schimper  
*Bryum algovicum* Sendtner ex Müller Hal.  
*pseudotriquetrum* (Hedwig) J.R. Spence [Bartram 1931; Mahler 1978]  
*Bryum pseudotriquetrum* (Hedwig) Gaertner et al.  
*turbinatum* (Hedwig) J.R. Spence [Bartram 1931; Mahler 1978]  
*Bryum turbinatum* (Hedwig) Turner

**Rhodobryum**

- ontariense* (Kindberg) Kindberg [Mahler 1985]  
*roseum* (Hedwig) Limpricht : Reported by Stark & Castetter (1986), but identification corrected to *Rhodobryum ontariense* (Kindberg) Kindberg

**Rosulabryum**

- audicola* (Hooker) Ochyra [Mohamed 1979]  
*Bryum billarderi* Schwägrichen  
*capillare* (Hedwig) J.R. Spence [Bartram 1931; Mahler 1978]  
*Bryum capillare* Hedwig  
*laevifilum* (Syed) Ochyra [Allred 2011]  
*Bryum laevifilum* Syed

*Webera nutans* Hedwig = *Pohlia nutans* (Hedwig) Lindberg

**Family BRYOXIPHIACEAE****Bryoxiphium**

- norvegicum* (Bridel) Mitten [Allred et al. 1998]

**Family CALLIERGONACEAE****Straminergon**

- stramineum* (Bridel) Hedenäs [Flowers 1973]  
*Calliergon stramineum* (Bridel) Kindberg

**Warnstorfia**

- exannulata* (Hedwig) Loeske [Romig & Allred 2013]  
*fluitans* (Hedwig) Loeske [Price 2011]  
*Drepanocladus fluitans* (Hedwig) Warnstorff  
*Hypnum fluitans* Hedwig

**Family CLIMACIACEAE****Climacium**

- americanum* Bridel [Mahler 1985]  
*dendroides* (Hedwig) Weber & Mohr [Bartram 1931; Mahler 1978]

**Family DICRANACEAE****Brothera**

- leana* (Sullivant) Muller Hal. [Kleinman et al. 2011]

**Dichodontium**

- pellucidum* (Hedwig) Schimper [Allred et al. 1998]

**Dicranella**

- varia* (Hedwig) Schimper [Ireland et al. 1981]

**Dicranoweisia**

- cirrata* (Hedwig) Lindberg ex Milde [Mahler 1978]  
*crispula* (Hedwig) Lindberg ex Milde [Bartram 1931; Mahler 1978]

**Dicranum**

- acutifolium* (Lindberg & Arnell) Jensen [Ireland 2007]  
*brevifolium* (Lindberg) Lindberg [Ireland 2007]  
*fuscescens* Turner var. *fuscescens* [Allred et al. 1998]  
*montanum* Hedwig [Bartram 1931; Mahler 1978]  
*nuehlenbeckii* Bruch & Schimper [Bartram 1931; Mahler 1978]  
*rhabdocarpum* Sullivant [Bartram 1931; Mahler 1978]  
*scoparium* Hedwig [Allred et al. 1998]  
*tauricum* Sapjegin [Romig & Allred 2013]

**Oncophorus**

- virens* (Hedwig) Bridel [Bartram 1931; Mahler 1978]  
*wahlenbergii* Bridel [Allred et al. 1998]

**Paraleucobryum**

- enerve* (Thedenius) Loeske [Bartram 1931; Mahler 1978]  
*longifolium* (Hedwig) Loeske [Bartram 1931; Mahler 1978]

**Rhabdoweisia**

- crispata* (Dickson ex Withering) Lindberg [Allred 2011]

**Symblepharis**

- helicophylla* Montagne = *Symblepharis vaginata* (Hooker) Wijk & Margadant  
*vaginata* (Hooker) Wijk & Margadant [Ireland et al. 1984; Mahler 1978]  
*Symblepharis helicophylla* Montagne

**Family DITRICHACEAE****Ceratodon**

- purpureus* (Hedwig) Bridel subsp. *purpureus* [Bartram 1931; Mahler 1978]  
*purpureus* (Hedwig) Bridel subsp. *stenocarpus* (Bruch & Schimper) Dixon [Darigo & Allred 2001]  
*stenocarpus* Bruch & Schimper = *Ceratodon purpureus* (Hedwig) Bridel subsp. *stenocarpus* (Bruch & Schimper) Dixon

**Distichium**

- capillaceum* (Hedwig) Bruch & Schimper [Bartram 1931; Mahler 1978]  
*inclinatum* (Hedwig) Bruch & Schimper [Allred 2012]

**Ditrichum**

- flexicaule* (Schwägrichen) Hampe [Allred et al. 1998]  
*gracile* (Mitten) Kuntze [Allred 2011]

**Saelania**

- glauescens* (Hedwig) Brotherus [Bartram 1931; Mahler 1978]  
*Didymodon trifarius* (Hedwig) Rohling

**Family ENCALYPTACEAE****Encalypta**

- ciliata* Hedwig [Bartram 1931; Mahler 1978]  
*rhaptocarpa* Schwägrichen [Conard & Redfearn 1979]  
*vulgaris* Hedwig [Chamberlain 1925; Bartram 1931]

**Family ENTODONTACEAE****Entodon**

- beyrichii* Schwägrichen [Buck 2014]  
*cladorrhizans* (Hedwig) Müller Hal. : Reported by Mahler (1978), but identification corrected to *Entodon schleicheri* (Schimper) Demeter [Darigo & Allred 2001]  
*concinus* (De Notaris) Paris [Bartram 1931; Mahler 1978]  
*Entodon orthocarpus* (Bridel) Lindberg  
*orthocarpus* (Bridel) Lindberg = *Entodon concinns* (De Notaris) Paris  
*schleicheri* (Schimper) Demeter [Buck & Crum 1978]  
*seductrix* (Hedwig) Muller Hal. [Blisard & Kleinman 2012]  
*sullivantii* (Müller Hal.) Lindberg [Crum & Anderson 1981]

**Family FABRONIACEAE**

(Continued on page 7)







(Continued from page 6)

**Fabronia**

- ciliaris* (Bridel) Bridel [Bartram 1931; Mahler 1978]  
*Fabronia ciliaris* (Bridel) Bridel var. *wrightii* (Sullivant) Buck  
*Fabronia gymnostoma* Sullivant & Lesquereux ex Sullivant  
*Fabronia octoblepharis* (Schleicher) Schwägrichen  
*Fabronia wrightii* Sullivant  
*ciliaris* (Bridel) Bridel var. *wrightii* (Sullivant) Buck = *Fabronia ciliaris* (Bridel) Bridel  
*gymnostoma* Sullivant & Lesquereux ex Sullivant = *Fabronia ciliaris* (Bridel) Bridel  
*octoblepharis* (Schleicher) Schwägrichen = *Fabronia ciliaris* (Bridel) Bridel  
*pusilla* Raddi [Mahler 1978]  
*wrightii* Sullivant = *Fabronia ciliaris* (Bridel) Bridel

**Family FISSIDENTACEAE****Fissidens**

- bryoides* Hedwig [Grout 1928-1940; Mahler 1978; Stark & Castetter 1982]  
*Fissidens bryoides* Hedwig var. *pusillus* (Wilson) Pursell  
*Fissidens bryoides* Hedwig var. *viridulus* (Swartz) Brotherus  
*Fissidens exiguus* Sullivant forma *emarginatus* Grout  
*Fissidens viridulus* (Swartz) Wahlenberg  
*bryoides* Hedwig var. *pusillus* (Wilson) Pursell = *Fissidens bryoides* Hedwig  
*bryoides* Hedwig var. *viridulus* (Swartz) Brotherus = *Fissidens bryoides* Hedwig  
*crispus* Montagne [Darigo & Allred 2001; Mahler 1978]  
*exiguus* Sullivant forma *emarginatus* Grout = *Fissidens bryoides* Hedwig var. *bryoides*  
*fontanus* (B.-Pyl.) Steudel [Weber 1973]  
*limbatus* Sullivant : Reported by Mahler (1978), but our material is referred to *Fissidens crispus* Montagne [Darigo & Allred 2001]  
*littlei* (Williams) Grout [Allred 1998; Williams 1936]  
*Moenkemeyera littlei* Williams  
*obtusifolius* Wilson var. *acuminatus* Grout [Eckel 1986]  
*obtusifolius* Wilson var. *apiculatus* Grout : Reported by Stark & Castetter (1982), but identification corrected to *Fissidens sublimbatus* Grout by Ron Pursell. [Darigo & Allred 2001]  
*sublimbatus* Grout [Pursell 2007]  
*viridulus* (Swartz) Wahlenberg = *Fissidens bryoides* Hedwig  
*Moenkemeyera littlei* Williams = *Fissidens littlei* (Williams) Grout

**Family FONTINALACEAE****Fontinalis**

- antipyretica* Hedwig [Mahler 1978; Welch 1963]  
*hypnoides* Hartman [Allred et al. 1998]  
*neomexicana* Sullivant & Lesquereux [Bartram 1931; Mahler 1978; Sullivant & Lesquereux 1856]

**Family FUNARIACEAE****Entosthodon**

- attenuatus* (Dickson) Bryhn [Miller & Miller 2007]  
*rubiginosus* (Williams) Grout [Ireland et al. 1984]

**Funaria**

- apiculatopilosa* Cardot [Worthington 1996]  
*Funaria orcuttii* Bartram  
*calvescens* Schwägrichen = *Funaria hygrometrica* Hedwig var. *calvescens* (Schwägrichen) Montagne  
*flavicans* Michaux [Miller & Miller 2007]  
*hygrometrica* Hedwig var. *calvescens* (Schwägrichen) Montagne [Darigo & Allred 2001]  
*Funaria calvescens* Schwägrichen  
*hygrometrica* Hedwig var. *hygrometrica* [Bartram 1931; Mahler 1978]  
*Funaria hygrometrica* Hedwig var. *utahensis* Grout  
*hygrometrica* Hedwig var. *utahensis* Grout = *Funaria hygrometrica*  
*muhlenbergii* Turner [Stark & Castetter 1982]  
*orcuttii* Bartram = *Funaria apiculatopilosa* Cardot

**Physconitrium***pyriforme* (Hedwig) Hampe [Ireland et al. 1984]**Pyramidula***tetragona* (Bridel) Bridel [Goffinet 2007]**Family GIGASPERMACEAE****Lorentziella***imbricata* (Mitten) Brotherus [Allred et al. 1998]**Family GRIMMIACEAE****Coscinodon**

- calyptratus* (Hooker) C. Jensen ex Kindberg [Bartram 1931; Hastings 1999; Mahler 1978]  
*Grimmia calyptrata* Hooker  
*cribrosus* (Hedwig) Spruce [Hastings 1999; Ireland et al. 1984]  
*Grimmia cribrosa* Hedwig  
*wrightii* Sullivant in Gray = *Jaffueliobryum wrightii* (Sullivant in Gray) Thériot

**Grimmia**

- affinis* Hoppe & Hornschuch ex Hornschuch = *Grimmia longirostris* Hooker  
*alpestris* (Weber & Mohr) Schleicher [Hastings & Greven 2007]  
*Grimmia ungeri* of New Mexico reports  
*alpicola* of American authors = *Schistidium agassizii* Sullivant & Lesquereux  
*alpicola* Swartz ex Hedwig var. *rivularis* = *Schistidium rivulare* (Bridel) Podpera var. *rivulare*  
*ambigua* (Sullivant) Sullivant = *Schistidium ambiguum* Sullivant  
*americana* Bartram [Allred 2011]  
*anodon* Bruch & Schimper [Bartram 1931; Mahler 1978]  
*apocarpa* Hedwig var. *ambigua* (Sullivant) G. Jones in Grout = *Schistidium ambiguum* Sullivant  
*apocarpa* Hedwig var. *apocarpa* = *Schistidium apocarpum* (Hedwig) Bruch & Schimper  
*apocarpa* Hedwig var. *conferta* (Funck) Sprengel = *Schistidium confertum* (Funck) Bruch & Schimper  
*apocarpa* Hedwig var. *stricta* = *Schistidium apocarpum* (Hedwig) Bruch & Schimper  
*arizonae* Renault & Cardot [Hastings & Greven 2007; Weber et al. 2003]  
*bernoullii* Mueller Hal. : Reported by Weber et al. (2003), but duplicate specimens were considered to be *Grimmia ovalis* (Hedwig) Lindberg (Hastings & Greven 2007); awaits verification.  
*calyptrata* Hooker = *Coscinodon calyptratus* (Hooker) C. Jensen ex Kindberg  
*catalinensis* Bartram = *Grimmia longirostris* Hooker  
*converta* Funck var. *obtusifolia* Schimper = *Schistidium apocarpum* (Hedwig) Bruch & Schimper  
*cribrosa* Hedwig = *Coscinodon cribrosus* (Hedwig) Spruce  
*crintoleucophaea* Cardot [Hastings & Greven 2007]  
*Grimmia poecilostoma* Cardot & Sebille  
*elatio* Bruch ex Balsamo-Crivelli & De Notaris [Darigo & Allred 2001]  
*donniana* Smith : Reported by Mahler (1978), but material re-identified as *Grimmia longirostris* Hooker [Darigo & Allred 2001]  
*laevigata* (Bridel) Bridel [Mahler 1978]  
*longirostris* Hooker [Darigo & Allred 2001]  
*Grimmia affinis* Hornschuch  
*Grimmia catalinensis* Bartram  
*montana* Bruch & Schimper [Darigo & Allred 2001]  
*orbicularis* Bruch ex Wilson [Mahler 1978]  
*ovalis* (Hedwig) Lindberg [Bartram 1931; Mahler 1978]  
*pilifera* Beauvois [Darigo & Allred 2001]  
*plagiopodia* Hedwig [Mahler 1978]  
*poecilostoma* Cardot & Sebille = *Grimmia crintoleucophaea* Cardot  
*pulvinata* (Hedwig) Smith [Mahler 1978]  
*raui* Austin = *Jaffueliobryum raui* Thériot  
*sessitana* De Notaris [Hastings & Greven 2007]

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- Grimmia tenerima* Renault & Cardot  
*tenerima* Renault & Cardot = *Grimmia sessitana* De Notaris  
*texicana* Greven [Greven 2010]  
*trichophylla* Grev. [Worthington 2011]  
*ungeri* of New Mexico reports = *Grimmia alpestris* (Weber & Mohr)  
 Schleicher  
*wrightii* (Sullivant in Gray) Austin = *Jaffueliobryum wrightii* (Sullivant in Gray) Thériot

***Jaffueliobryum***

- raui* (Austin) Thériot [Ireland et al. 1981]  
*Grimmia raui* Austin  
*wrightii* (Sullivant in Gray) Thériot [Bartram 1931; Mahler 1978]  
*Coscinodon wrightii* Sullivant in Gray  
*Grimmia wrightii* (Sullivant in Gray) Austin

***Schistidium***

- alpicola* of Amer. authors = *Schistidium rivulare* (Bridel) Podpera  
*ambiguum* Sullivant [Sullivant 1849] Note : The type is a Fendler specimen from Santa Fe; essentially ignored by bryologists since its publication; possibly conspecific with *Schistidium confertum* (Funck) Bruch & Schimper.  
*Grimmia ambigua* (Sullivant) Sullivant  
*Grimmia apocarpa* Hedwig var. *ambigua* (Sullivant) G. Jones in Grout  
*apocarpum* (Hedwig) Bruch & Schimper : reported by Bartram (1931) and Mahler (1978), but this species occurs in northern U.S. and Canada (McIntosh 2007); our material is perhaps referred to *Schistidium ambiguum* Sullivant or *Schistidium confertum* (Funck) Bruch & Schimper  
*Grimmia apocarpa* Hedwig  
*Grimmia apocarpa* Hedwig var. *stricta*  
*Grimmia converta* Funck var. *obtusifolia* Schimper  
*atrofusum* (Schimper) Limpricht [McIntosh 2007]  
*confertum* (Funck) Bruch & Schimper : not reported for NM, but material previously referred to *Schistidium apocarpum* (Hedwig) Bruch & Schimper may belong to this species; awaits verification.  
*Grimmia apocarpa* Hedwig var. *conferta* (Funck) Sprengel  
*dupretii* (Thériot) W.A. Weber [Allred 2011]  
*frigidum* H.H. Blom [McIntosh 2007]  
*rivulare* (Bridel) Podpera var. *latifolium* (Zetterstedt) Crum & Anderson = *Schistidium rivulare* (Bridel) Podpera  
*rivulare* (Bridel) Podpera [Bartram 1931; Mahler 1978]  
*Grimmia alpicola* of Amer. authors  
*Grimmia alpicola* Swartz ex Hedwig var. *rivularis* (Bridel) Wahlenberg  
*Schistidium alpicola* of Amer. authors  
*Schistidium rivulare* (Bridel) Podpera var. *latifolium* (Zetterstedt) Crum & Anderson  
*viride* H.H. Blom & Darigo [Allred 2011]

**Family HEDWIGIACEAE*****Braunia***

- secunda* (Hooker) Bruch, Schimper, & Gumbel [Allred et al. 1998]

***Hedwigia***

- ciliata* (Hedwig) P. Beauvois [Bartram 1931; Mahler 1978]

**Family HYLOCOMIACEAE*****Hylocomium***

- splendens* (Hedwig) Schimper [Bartram 1931; Mahler 1978]

***Pleurozium***

- schreberi* (Bridel) Mitten [Mahler 1985]

**Family HYPNACEAE**

- Breidleria pratensis* (Koch ex Spruce) Loeske = *Hypnum pratense* (Rabenh.) Spruce  
*arcuata* (Lindberg) Loeske = *Hypnum lindbergii* Mitten  
*Calliergonella lindbergii* (Mitten) Hedenäs = *Hypnum lindbergii* Mitten  
*Homomallium*

- adnatum* (Hedwig) Brotherus : Plants previously thought to be *Homomallium adnatum* have all been verified by Bruce Allen (MO) as *Homomallium mexicanum* Cardot  
*incurvatum* (Schrader ex Bridel) Loeske [Allred 2012]  
*mexicanum* Cardot var. *latifolium* Cardot [Bartram 1931; Mahler 1978]  
*mexicanum* Cardot var. *mexicanum* [Bartram 1931; Mahler 1978]

***Hypnum***

- albicans* Hedwig = *Brachythecium albicans* (Hedwig) Schimper  
*collinum* Schleicher ex Müller Hal. = *Brachytheciastrum collinum* (Schleicher ex Müller Hal.) Ignatov & Huttunen  
*cupressiforme* Hedwig var. *subulaceum* Molendo [Bartram 1931; BFNA28; Little 1937]  
*fluitans* Hedwig = *Wamstorffia fluitans* (Hedwig) Loeske  
*lindbergii* Mitten [Bartram 1931; Mahler 1978]  
*Breidleria arcuata* (Lindberg) Loeske  
*Calliergonella lindbergii* (Mitten) Hedenäs  
*molle* (Hedwig) Loeske subsp. *bestii* Renault & Bryhn = *Hygrohypnum bestii* (Renault & Bryhn) Holzinger  
*pallescens* (Hedwig) P. Beauvois [Stark & Castetter 1982]  
*pratense* (Rabenh.) Spruce [Allred et al. 1998]  
*Breidleria pratensis* (Koch ex Spruce) Loeske  
*pulchellum* Hedwig = *Eurhynchiastrum pulchellum* (Hedwig) Ignatov & Huttunen  
*revolutum* (Mitten) Lindberg [Bartram 1931; Mahler 1978]  
*ruderales* Bridel = *Brachythecium ruderales* (Bridel) W.R. Buck  
*salebrosum* Weber & Mohr = *Brachythecium salebrosum* (Weber & Mohr) Schimper  
*serrulatum* Hedwig = *Rhynchostegium serrulatum* (Hedwig) Jaeger & Sauerbeck  
*vaucheri* Lesquereux [Ireland et al. 1981]  
*velutinum* = *Brachytheciastrum velutinum* (Hedwig) Ignatov & Huttunen  
*wahlenbergii* F. Weber & Mohr = *Pohlia wahlenbergii* (F. Weber & Mohr) Andrews

***Isoeterygiopsis***

- pulchella* (Hedwig) Iwatsuki [Allred et al. 1998]  
*Isoeterygium pulchellum* (Hedwig) Jaeger  
*Plagiothecium pulchellum* (Hedwig) Schimper

***Isoeterygium***

- homomallifolium* Redfearn = *Pseudotaxiphyllum homomallifolium* (Redfearn) Ireland  
*pulchellum* (Hedwig) Jaeger = *Isoeterygiopsis pulchella* (Hedwig) Iwatsuki  
*tenerum* Mitten [Allred et al. 1998]

***Platygyrium***

- fuscoluteum* Cardot [Mahler 1978; Reese 1999]  
*repens* (Bridel) Schimper [Allred 2012]

***Pseudotaxiphyllum***

- homomallifolium* (Redfearn) Ireland [Ireland et al. 1984]  
*Isoeterygium homomallifolium* Redfearn

***Pylaisia***

- polyantha* (Hedwig) Schimper [Bartram 1931; Mahler 1978]  
*Pylaisiella polyantha* (Hedwig) Grout  
*sehwyinii* (Kindberg) Crum, Steere, & L.E. Anderson [Allred 2011]  
*Pylaisiella polyantha* (Hedwig) Grout = *Pylaisia polyantha* (Hedwig) Schimper  
*Taxiphyllum*

- deplanatum* (Bruch & Schimper ex Sullivant) Fleischer [Bartram 1931; Mahler 1978]  
*taxirameum* (Mitten) Fleischer [Mahler 1978]

**Family LESKEACEAE*****Bryohaplodadium***

- angustifolium* (Hampe & Müller Hal.) Watson & Iwatsuki = *Haplodadium angustifolium* (Hampe & Müller Hal.) Brotherus  
*microphyllum* (Hedwig) Watson & Iwatsuki = *Haplodadium microphyllum* (Hedwig) Brotherus

***Claopodium***

- pellucinerve* (Mitten) Best [Mahler 1978]

***Haplodadium***

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(Continued from page 8)

- angustifolium** (Hampe & Müller Hal.) Brotherus [Allred et al. 1998]  
*Bryohaplocladium angustifolium* (Hampe & Müller Hal.) Watson & Iwatsuki
- microphyllum** (Hedwig) Brotherus [Bartram 1931; Mahler 1978; Stark & Castetter 1986]  
*Bryohaplocladium microphyllum* (Hedwig) Watson & Iwatsuki
- Leptopterigynandrum**  
**australpinum** Müller Hal. [Allred et al. 1998]
- Lescuraea**  
*arizonae* (Williams) P. Wilson & Norris = *Pseudoleskeella arizonae* (Williams) Lawton  
*incurvata* (Hedwig) Lawton = *Pseudoleskea incurvata* (Hedwig) Loeske  
*saxicola* (Schimper) Milde [Mahler 1985]
- Leskea**  
*acuminata* Hedwig = *Brachythecium acuminatum* (Hedwig) Austin  
*angustata* Taylor [Worthington 2012]  
*fendleri* Sullivant = *Brachytheciastrum fendleri* (Sullivant) Ochyra & Zarnowiec
- Leskeella**  
*nervosa* (Bridel) Loeske [Stark & Castetter 1986]  
*Pseudoleskeella nervosa* (Bridel) Nyholm  
*nervosa* (Bridel) Loeske var. *sibirica* (Arnell) Brotherus = *Pseudoleskeella rupestris* (Berggren) Hedenas & Soderstrom  
*williamsii* Best = *Pseudoleskeella tectorum* (Funck ex Bridel) Kindberg
- Lindbergia**  
*brachyptera* (Mitten) Kindberg [Bartram 1931; Mahler 1978]  
*mexicana* (Beschereille) Cardot ex Pringle [Bartram 1949]
- Pseudoleskea**  
*incurvata* (Hedwig) Loeske [Mahler 1985]  
*Lescuraea incurvata* (Hedwig) Lawton  
*radicosa* (Mitten) Macoun & Kindberg var. *radicosa* [Worthington 1996]
- Pseudoleskeella**  
*arizonae* (Williams) Lawton [Bartram 1931; Mahler 1978]  
*Lescuraea arizonae* (Williams) P. Wilson & Norris  
*nervosa* (Bridel) Nyholm = *Leskeella nervosa* (Bridel) Loeske var. *nervosa*  
*rupestris* (Berggren) Hedenas & Soderstrom [Allred 2011]  
*Leskeella nervosa* (Bridel) Loeske var. *sibirica* (Arnell) Brotherus  
*Pseudoleskeella sibirica* (Arnell) P. Wilson & Norris  
*sibirica* (Arnell) P. Wilson & Norris = *Pseudoleskeella rupestris* (Berggren) Hedenas & Soderstrom  
*tectorum* var. *flagellifera* (Best) Amann = *Pseudoleskeella tectorum* (Funck ex Bridel) Kindberg  
*tectorum* (Funck ex Bridel) Kindberg [Bartram 1931; Mahler 1978]  
*Leskeella williamsii* Best  
*Pseudoleskeella tectorum* var. *flagellifera* (Best) Amann

#### Family MEESACEAE

- Leptobryum**  
*pyriforme* (Hedwig) Wilson [Bartram 1931; Mahler 1978]

#### Family MIELICHHOFERACEAE

- Pohlia**  
*bolanderi* (Sullivant) Brotherus [Shaw, A.J. 2014]  
*Bryum bolanderi* Sullivant  
*cruda* (Hedwig) Lindberg [Bartram 1931; Mahler 1978]  
*Mnium crudum* Hedwig  
*drummondii* (Müller Hal.) Andrews [Stark & Castetter 1982]  
*Bryum drummondii* Müller Hal.  
*elongata* Hedwig [Allred et al. 1998]  
*nutans* (Hedwig) Lindberg [Bartram 1931; Mahler 1978]  
*Webera nutans* Hedwig  
*obtusifolia* (Bridel) Koch [Worthington 2012]  
*tundrae* A.J. Shaw [Allred 2012]  
*wahlenbergii* (F. Weber & Mohr) Andrews [Ireland et al. 1981]  
*Hypnum wahlenbergii* F. Weber & Mohr

#### Family MNIACEAE

- Mnium**  
*affine* Bland. ex Funck var. *rugicum* (Laur.) Bruch & Schimper = *Plagiomnium ellipticum* (Bridel) T. Koponen  
*arizonicum* Amann [Bartram 1931; Mahler 1978]  
*blyttii* Bruch & Schimper [Bartram 1931; Mahler 1978]  
*crudum* Hedwig = *Pohlia cruda* (Hedwig) Lindberg  
*marginatum* (Dickson ex Withering) Bridel ex P. Beauvois [Bartram 1931; Mahler 1978]  
*thomsonii* Schimper [Bartram 1931; Mahler 1978]
- Plagiomnium**  
*ciliare* (Müller Hal.) Koponen [Allred 2012]  
*cuspidatum* (Hedwig) Koponen [Bartram 1931; Mahler 1978]  
*ellipticum* (Bridel) Koponen [Allred et al. 1998]  
*Mnium affine* Bland. ex Funck var. *rugicum* (Laur.) Bruch & Schimper  
*medium* (Bruch & Schimper) Koponen [Allred 2012]  
*rostratum* (Schrader) Koponen [Bartram 1931; Mahler 1978]  
Pohlia : go to Mielichhoferiaceae
- Rhizomnium**  
*magnifolium* (Horik.) T. Koponen [Crum & Anderson 1981, as *Mnium punctatum*]  
*pseudopunctatum* (Bruch & Schimper) Koponen [Mahler 1985]  
*punctatum* (Hedwig) T. Koponen [Allred et al. 1998]

#### Family NECKERACEAE

- Metaneckera menziesii* (Drummond) Steere = *Neckera menziesii* Drummond
- Neckera**  
*menziesii* Drummond [Cardot 1910; Mahler 1978]  
*Metaneckera menziesii* (Drummond) Steere  
*Porotrichum neomexicanum* (Cardot) Wagner  
*pennata* Hedwig [Bartram 1931; Mahler 1978]  
*Neckera pennata* Hedwig var. *tenera* Müller Hal.  
*pennata* Hedwig var. *tenera* Müller Hal. = *Neckera pennata* Hedwig  
*Porotrichum neomexicanum* (Cardot) Wagner = *Neckera menziesii* Drummond

#### Family ORTHOTRICHACEAE

- Orthotrichum**  
*alpestre* Hornschuch ex Bruch & Schimper [Mahler 1978]  
*anomalum* Hedwig [Bartram 1931; Mahler 1978]  
*cupulatum* Bridel [Worthington 2012]  
*diaphanum* Bridel [Mahler 1978]  
*hallii* Sullivant & Lesquereux in Sullivant [Bartram 1931; Mahler 1978]  
*laevigatum* Zetterstedt [Allred et al. 1998]  
*obtusifolium* Bridel [Mahler 1978]  
*pallens* Bridel [Romig & Allred 2013]  
*pellucidum* Lindberg [Worthington 2012]  
*pumilum* Swartz [Mahler 1978]  
*pycnophyllum* Schimper [Vitt 1973]  
*rupestre* Schleicher ex Schwägrichen [Bartram 1931; Mahler 1978]  
*tenellum* Bruch ex Bridel : Reported by Mahler (1978), but this species occurs in the West Coast states and Nevada, and is not likely in NM; our material most likely referred to *Orthotrichum pumilum* Swartz.

#### Zygodon

- viridissimus* (Dickson) Bridel var. *rupestris* Lindberg ex Hartman [Bartram 1931; Mahler 1978]  
*Zygodon viridissimus* (Dickson) Bridel var. *vulgaris* Malta  
*viridissimus* (Dickson) Bridel var. *vulgaris* Malta = *Zygodon viridissimus* (Dickson) Bridel var. *rupestris* Lindberg ex Hartman

#### Family PLAGIOTHECIACEAE

- Plagiothecium**  
*denticulatum* (Hedwig) Schimper [Ireland et al. 1981]

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*laetum* Schimper [Mahler 1978]

*pulchellum* (Hedwig) Schimper = *Isopterygiopsis pulchella* (Hedwig) Iwatsuki

#### Family POLYTRICHACEAE

##### *Atrichum*

*rupestris* Hedwig : Reported by Mahler (1985), but not included in North America by Smith-Merrill (2007); awaits verification.

*selwynii* Austin [Mahler 1985; Smith-Merrill 2007]

*tenellum* (Röhling) Bruch & Schimper [Romig & Allred 2013]

*undulatum* (Hedwig) P. Beauvois : Reported by Bartram (1931) and Mahler (1978), but scarcely in North America fide Smith-Merrill (2007); specimens await correct determination.

##### *Meiotrichum*

*lyallii* (Mitten) G.L. Smith [Conard & Redfean 1979; Smith-Merrill 2007]

*Polytrichum lyallii* (Mitten) Kindberg

*Pogonatum alpinum* (Hedwig) Rhl. = *Polytrichastrum alpinum* (Hedwig) G.L. Smith

##### *Polytrichastrum*

*alpinum* (Hedwig) G.L. Smith var. *alpinum* [Bartram 1931; Mahler 1985]

*Pogonatum alpinum* (Hedwig) Rhl.

*ohioense* (Renauld & Cardot) G.L. Smith [Smith-Merrill 2007]

*sexangulare* (Bridel) G.L. Smith [Mahler 1978]

*Polytrichum sexangulare* Bridel

##### *Polytrichum*

*juniperinum* Hedwig [Bartram 1931; Mahler 1978]

*lyallii* (Mitten) Kindberg = *Meiotrichum lyallii* (Mitten) G.L. Smith

*piliferum* Hedwig [Mahler 1985; Smith-Merrill 2007]

*sexangulare* Bridel = *Polytrichastrum sexangulare* (Bridel) G.L. Smith

#### Family POTTIACEAE

##### *Aloina*

*rigida* (Hedwig) Limpricht var. *rigida* [Delgadillo-M. 2007; Mahler 1978]

*Anoetangium obtusifolium* (Brotherus & Paris in Cardot) Grout = *Molendoa sendtneriana* (Bruch & Schimper) Limpricht

*Astomum phascoides* (Drumm.) Grout = *Weissia phascopsis* Zander

##### *Barbula*

*acuta* (Bridel) Bridel = *Didymodon rigidulus* Hedwig var. *gracilis* (Schleicher ex Hooker & Greville) Zander

*acuta* (Bridel) Bridel var. *bescherellei* (Sauerbeck ex Jaeger) Crum = *Didymodon rigidulus* Hedwig var. *gracilis* (Schleicher ex Hooker & Greville) Zander

*bescherellei* Sauerbeck = *Didymodon rigidulus* Hedwig var. *gracilis* (Schleicher ex Hooker & Greville) Zander

*bolleana* (Müller Hal.) Brotherus [Eckel 1988; Zander 2007]

*Barbula ehrenbergii* (Lorentz) Fleischer

*convoluta* Hedwig var. *convoluta* [Zander 2007]

*ehrenbergii* (Lorentz) Fleischer = *Barbula bolleana* (Müller Hal.) Brotherus

*gracilis* Schwägrichen = *Didymodon rigidulus* Hedwig var. *gracilis* (Schleicher ex Hooker & Greville) Zander

*indica* (Hooker) Sprengel var. *indica* [Zander 2007]

*reflexa* (Bridel) Bridel = *Didymodon ferrugineus* (Schimper ex Beschereille) M.O. Hill

*sinensis* Müller Hal. = *Syntrichia sinensis* (Müller Hal.) Ochyra

*spiralis* (Schimper) ex Müller Hal. = *Pseudocrossidium replicatum* (Taylor) Zander

*unguiculata* Hedwig [Bartram 1931; Mahler 1978]

##### *Bryoerythrophyllum*

*recurvirostrum* (Hedwig) Chen [Bartram 1931; Mahler 1978]

*Bryoerythrophyllum recurvirostrum* (Hedwig) Chen var. *dentatum* (Schimper) Crum et al.

*Didymodon recurvirostrum* (Hedwig) Jennings

*Weissia recurvirostra* Hedwig

*recurvirostrum* (Hedwig) Chen var. *dentatum* (Schimper) Crum et al. = *Bryoerythrophyllum recurvirostrum* (Hedwig) Chen

##### *Chenia*

*leptophylla* (Müller Hal.) Zander [Ireland et al. 1984]

*Chenia rhizophylla* Sakurai) Zander

*Tortula rhizophylla* (Sakurai) Iwatsuki & Saito

##### *Crossidium*

*aberrans* Holzinger & Bartram [Ireland et al. 1981]

*crassinervium* (De Notaris) Juratzka var. *crassinervium* [Stark & Castetter 1986]

*seriatum* Crum & Steere [Delgadillo-M. 1996]

##### *Crumia*

*latifolia* (Kindberg) W.B. Schofield [Kleinman 2012]

*Desmatodon cernuus* (Hübner) Bruch & Schimper = *Tortula cernua* (Hübner) Lindberg

*convolutus* (Bridel) Grout = *Tortula atrovirens* (J.E. Smith) Lindberg

*guepinii* Bruch & Schimper = *Tortula guepinii* (Bruch & Schimper) Brotherus

*heimii* (Hedwig) Mitten = *Hennediella heimii* (Hedwig) Zander

*latifolius* (Hedwig) Bridel = *Tortula euryphylla* Zander

*latifolius* (Hedwig) Bridel var. *muticus* (Bridel) Bridel = *Tortula hoppeana* (Schultz) Ochyra

*obtusifolius* (Schwägrichen) Schimper = *Tortula obtusifolia* (Schwägrichen) Mathey

*plinthobius* Sull. & Lesquereux = *Tortula plinthobia* (Sullivant & Lesquereux) Austin

##### *Didymodon*

*anserinocapitatus* (X.-j. Li) Zander [Zander & Weber 1997]

*acutus* (Bridel) Saito = *Didymodon rigidulus* Hedwig

*australasiae* (Greville & Hooker) Zander [Stark & Castetter 1986; Ireland et al. 1984]

*Husnotiella torquescens* (Cardot) Bartram

*Trichostomopsis australasiae* (Greville & Hooker) Robinson

*australasiae* (Hooker & Greville) Zander var. *umbrosus* (Müller Hal.)

Zander = *Didymodon umbrosus* (Müller Hal.) Zander

*brachyphyllus* (Sullivant) Zander [Zander & Ochyra 2001]

*Didymodon luridus* of NM reports

*fallax* (Hedwig) Zander [Zander 2007]

*fallax* (Hedwig) Zander var. *reflexus* (Bridel) Zander = *Didymodon*

*ferrugineus* (Schimper ex Beschereille) M.O. Hill

*ferrugineus* (Schimper ex Beschereille) M.O. Hill [Bartram 1931; Mahler 1978]

*Barbula reflexa* (Bridel) Bridel

*Didymodon fallax* (Hedwig) Zander var. *reflexus* (Bridel) Zander

*luridus* of NM reports = *Didymodon brachyphyllus* (Sullivant) Zander

*nevadensis* Zander [Zander 2007]

*recurvirostrum* (Hedwig) Jennings = *Bryoerythrophyllum recurvirostrum* (Hedwig) Chen

*revolutus* (Cardot) Williams [Stark & Castetter 1982]

*rigidulus* Hedwig var. *gracilis* (Schleicher ex Hooker & Greville)

Zander [Bartram 1931; Mahler 1978; Stark & Castetter 1986]

*Barbula acuta* Bridel

*Barbula acuta* (Bridel) Bridel var. *bescherellei* (Sauerbeck ex Jaeger) Crum

*Barbula beschereillei* Sauerbeck

*Didymodon acutus* (Bridel) Saito

*rigidulus* Hedwig var. *icmadophilus* (Müller Hal.) Zander [Allred et al. 1998]

*rigidulus* Hedwig var. *rigidulus* [Bartram 1931]

*tectorum* (Müller Hal.) Saito [Zander & Ochyra 2001]

*tophaceus* (Bridel) Lisa [Bartram 1931; Mahler 1978]

*trifarius* (Hedwig) Rhl. = *Saelania glaucescens* (Hedwig) Brotherus (Ditrichaceae)

*umbrosus* (Müller Hal.) Zander [Zander 2007]

*Didymodon australasiae* (Hooker & Greville) R.H. Zander var.

*umbrosus* (Müller Hal.) R.H. Zander

*vinealis* (Bridel) Zander var. *luridus* of NM reports = *Didymodon brachyphyllus* (Sullivant) Zander

*vinealis* (Bridel) Zander var. *vinealis* [Stark & Castetter 1982]

##### *Eucladium*

*verticillatum* (Bridel) Bruch & Schimper [Bartram 1931; Mahler 1978]

*Weissia verticillata* Bridel

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**Gymnostomum**

- aeruginosum* Smith [Bartram 1931; Mahler 1978]  
*Gymnostomum calcareum* of NM reports  
*calcareum* of NM reports = *Gymnostomum aeruginosum* Smith

**Hennediella**

- heimii* (Hedwig) Zander var. *heimii* [Bartram 1931; Mahler 1978]  
*Desmatodon heimii* (Hedwig) Mitten  
*Pottia heimii* (Hedwig) Hampe  
*Husnotiella torquescens* (Cardot) Bartram = *Didymodon australasiae* (Greville & Hooker) Zander  
*Hymenostomum tortile* (Schwägrichen) Bruch & Schimper = *Weissia condensata* (Voit) Lindberg

**Hymenostylium**

- recurvirostrum* (Hedwig) Dixon var. *recurvirostrum* [Bartram 1931; Mahler 1978]  
*Gymnostomum recurvirostrum* Hedwig

**Leptodontium**

- flexifolium* (Withering) Hampe in Lindberg [Mahler 1978]

**Microbryum**

- davallianum* (Smith) R.H. Zander var. *conicum* (Schwägrichen) R. H. Zander [Reported tentatively by Worthington 1996]  
*Pottia texana* Wareham  
*starckeanum* (Hedwig) R.H. Zander var. *fosbergii* (Bartr.) Zander [Allred 2011]  
*starckeanum* (Hedwig) R.H. Zander var. *starckeanum* [Ireland et al. 1981]  
*Pottia arizonica* Wareham var. *mucronulata* Wareham

**Molendia**

- sandtneriana* (Bruch & Schimper) Limpricht [Ireland et al. 1981; Stark & Castetter 1982]  
*Anoetangium obtusifolium* (Brotherus & Paris in Cardot) Grout  
*Neocardotia subnigra* (Mitten) Thériot & Bartram = *Rhexophyllum subnigrum* (Mitten) Thériot ex Hilpert  
*Oxystegus tenuirostris* (Hooker & Taylor) A.J.E. Smith = *Trichostomum tenuirostre* (Hooker & Taylor) Lindberg  
*Phascum cuspidatum* Hedwig = *Tortula acaulon* (Withering) Zander

**Pleurochaete**

- luteola* (Bescherelle) Thériot [Mahler 1978]  
*Pleurochaete squarrosa* of New World reports  
*squarrosa* of New World reports = *Pleurochaete luteola* (Bescherelle) Thériot  
*Pottia arizonica* Wareham var. *mucronulata* Wareham = *Microbryum starckeanum* (Hedw.) R. H. Zander [Ireland et al. 1981]  
*bryoides* (Dickson) Mitten = *Tortula protobryoides* R. H. Zander  
*heimii* (Hedwig) Hampe = *Hennediella heimii* (Hedwig) Zander  
*nevadensis* Cardot & Thériot = *Tortula nevadensis* (Cardot & Thériot) R. H. Zander  
*texana* Wareham = *Microbryum davallianum* (Smith) R. H. Zander var. *conicum* (Schwägrichen) R. H. Zander [Reported tentatively by Worthington 1996]

**Pseudocrossidium**

- crinitum* (Schultz) Zander [Mahler 1978]  
*Pseudocrossidium aureum* (Bartram) Zander  
*Tortula aurea* Bartram  
*aureum* (Bartram) Zander = *Pseudocrossidium crinitum* (Schultz) Zander  
*obtusulum* (Lindberg) Crum [Zander 2007]  
*replicatum* (Taylor) Zander [Mahler 1978, as *Barbula spiralis*]  
*Barbula spiralis* (Schimper) ex Müller Hal.

**Pterygoneurum**

- cavifolium* (Ehrh.) Juratzka = *Pterygoneurum ovatum* (Hedwig) Dixon  
*ovatum* (Hedwig) Dixon [Mahler 1978]  
*Pterygoneurum cavifolium* (Ehrh.) Juratzka  
*subsessile* (Bridel) Juratzka var. *subsessile* [Ireland et al. 1981]

**Rhexophyllum**

- subnigrum* (Mitten) Thériot ex Hilpert [Bartram 1931; Mahler 1978]  
*Neocardotia subnigra* (Mitten) Thériot & Bartram

**Stegonia**

- latifolia* (Schwägrichen) Venturi ex Brotherus var. *latifolia* [Zander

2007]

**Syntrichia**

- bartramii* (Steere) Zander [Mahler 1978]  
*Tortula bartramii* Steere in Grout  
*caninervis* Mitten [Flowers 1973, as *Tortula bistratosa* Flowers]  
*Tortula bistratosa* Flowers  
*Tortula caninervis* (Mitten) Brotherus  
*chisoa* (Magill, Delgadillo, & Stark) Zander [Magill et al. 1983; Stark & Castetter 1986]  
*Tortula chisoa* Magill, Delgadillo, & Stark  
*fragilis* (Taylor) Ochyra [Bartram 1931; Mahler 1978]  
*Tortula fragilis* Taylor  
*inermis* (Bridel) Bruch = *Tortula inermis* (Bridel) Montagne  
*laevipila* Bridel [Bartram 1931; Mahler 1978]  
*Tortula pagorum* (Milde) De Notaris  
*montana* Nees [Allred et al. 1998; Mishler 2007]  
*Tortula intermedia* (Bridel) Berkeley  
*Tortula montana* (Nees) Lindberg  
*norvegica* Weber & Mohr [Allred et al. 1998; Flowers 1973]  
*Tortula norvegica* (Weber & Mohr) Wahlenberg ex Lindberg  
*obtusissima* (Müller Hal.) Zander [Ireland et al. 1981]  
*Tortula obtusissima* (Müller Hal.) Mitten  
*pagorum* (Milde) Amann = *Syntrichia laevipila* Bridel  
*papillosa* (Wilson) Juratzka [Weber 1957]  
*Tortula papillosa* Wilson  
*papillosissima* (Coppey) Loeske [Flowers 1973]  
*Tortula papillosissima* (Coppey) Brotherus  
*Tortula ruralis* (Hedwig) Gaertner var. *hirsuta* (Venturi) Paris  
*ruralis* (Hedwig) Weber & Mohr [Bartram 1931; Mahler 1978]  
*Tortula ruralis* (Hedwig) Gaertner  
*Tortula ruralis* (Hedwig) Gaertner et al. var. *crinita* De Notaris  
*sinensis* (Müller Hal.) Ochyra [Mishler 2007]  
*Barbula sinensis* Müller Hal.

**Timmiella**

- anomala* (Bruch & Schimper) Limpricht [Stark & Castetter 1986]

**Tortella**

- fragilis* (Hooker & Wilson) Limpricht [Romig & Allred 2013]  
*humilis* (Hedwig) Jennings [Ireland et al. 1981]  
*tortuosa* (Hedwig) Limpricht var. *fragilifolia* [Romig & Allred 2013]  
*tortuosa* (Hedwig) Limpricht var. *tortuosa* [Stark & Castetter 1982]

**Tortula**

- aurea* Bartram = *Pseudocrossidium crinitum* (Schultz) Zander  
*acaulon* (Withering) Zander [Ireland et al. 1981; Zander & Eckel 2007]  
*Phascum cuspidatum* Hedwig  
*atrovirens* (J.E. Smith) Lindberg [Stark & Castetter 1986]  
*Desmatodon convolutus* (Bridel) Grout  
*bartramii* Steere in Grout = *Syntrichia bartramii* (Steere) Zander  
*bistratosa* Flowers = *Syntrichia caninervis* Mitten  
*brevipes* (Lesquereux) Brotherus [Allred et al. 1998]  
*caninervis* (Mitten) Brotherus = *Syntrichia caninervis* Mitten  
*cernua* (Hübner) Lindberg [Crum & Anderson 1981]  
*Desmatodon cernuus* (Hb.) Bruch & Schimper  
*chisoa* Magill, Delgadillo, & Stark = *Syntrichia chisoa* (Magill, Delgadillo, & Stark) Zander  
*euryphylla* Zander = *Tortula hoppeana* (Schultz) Ochyra  
*fragilis* Taylor = *Syntrichia fragilis* (Taylor) Ochyra  
*guelpinii* (Bruch & Schimper) Brotherus [Mahler 1978]  
*Desmatodon guelpinii* Bruch & Schimper  
*hoppeana* (Schultz) Ochyra [Mahler 1978; Zander & Eckel 2007]  
*Desmatodon latifolius* (Hedwig) Bridel  
*Desmatodon latifolius* (Hedwig) Bridel var. *nuticus* (Bridel) Bridel  
*Tortula euryphylla* Zander  
*inermis* (Bridel) Montagne [Mahler 1978]  
*Syntrichia inermis* (Bridel) Bruch  
*intermedia* (Bridel) Berkeley = *Syntrichia montana* Nees  
*montana* (Nees) Lindberg = *Syntrichia montana* Nees  
*mucronifolia* Schwägrichen [Bartram 1931; Mahler 1978]

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*nevadensis* (Cardot & Thériot) R.H. Zander [Ireland et al. 1984]*Pottia nevadensis* Cardot & Thériot*norvegica* (Weber & Mohr) Wahlenberg ex Lindberg = *Syntrichia norvegica* Weber & Mohr*obtusifolia* (Schwägrichen) Mathieu [Bartram 1931; Mahler 1978]*Desmatodon obtusifolius* (Schwägrichen) Schimper*obtusissima* (Müller Hal.) Mitten = *Syntrichia obtusissima* (Müller Hal.) Zander*pagorum* (Milde) De Notaris = *Syntrichia laevipila* Bridel*papillosa* Wilson = *Syntrichia papillosa* (Wilson) Juratzka*papillosissima* (Coppey) Brotherus = *Syntrichia papillosissima* (Coppey) Loeske*Tortula ruralis* (Hedwig) Gaertner var. *hirsuta* (Venturi) Paris*plinthobia* (Sullivant & Lesquereux) Austin [Mahler 1978]*Desmatodon plinthobius* Sullivant & Lesquereux*protobryoides* R.H. Zander [Allred et al. 1998]*Pottia bryoides* (Dickson) Mitten*rhizophylla* (Sakurai) Iwatsuki & Saito = *Chenia leptophylla* (Müller Hal.) Zander*ruralis* (Hedwig) Gaertner et al. var. *crinita* De Notaris = *Syntrichia ruralis* (Hedwig) Weber & Mohr*ruralis* (Hedwig) Gaertner var. *hirsuta* (Venturi) Paris = *Syntrichia papillosissima* (Coppey) Loeske*ruralis* (Hedwig) Gaertner = *Syntrichia ruralis* (Hedwig) Weber & Mohr*Tortula ruralis* (Hedwig) Gaertner et al. var. *crinita* De Notaris*Trichostomopsis australasiae* (Greville & Hooker) Robinson = *Didymodon australasiae* (Greville & Hooker) Zander**Trichostomum***Trichostomum svihlae* Bartram = *Tuerckheimia svihlae* (Bartram) Zander*brachydontium* Bruch [Ireland et al. 1984]*crispulum* Bruch [Ireland et al. 1984]*planifolium* (Dixon) R.H. Zander [Stark 1996]*Trichostomum swettii* (Bartram) Stark*Weissia planifolia* Dixon*Weissia swettii* Bartram*swettii* (Bartram) Stark = *Trichostomum planifolium* (Dixon) R.H. Zander*tenuirostre* (Hooker & Taylor) Lindberg [Ireland et al. 1984]*Oxystegus tenuirostris* (Hooker & Taylor) A.J.E. Smith*Weissia tenuirostris* Hooker & Taylor**Tuerckheimia***svihlae* (Bartram) Zander [Worthington 2012]*Trichostomum svihlae* Bartram**Weissia***andersoniana* Zander = *Weissia ligulifolia* (Bartram) Grout  
*condensa* (Voit) Lindberg : Not known from North America [Zander 2007]; reports of this species in NM refer to *Weissia controversa* Hedwig*Hymenostomum tortile* (Schwägrichen) Bruch & Schimper*Weissia tortilis* (Schwägrichen) Müller Hal.*controversa* Hedwig [Bartram 1931; Mahler 1978]*Weissia condensa* auct., non (Voit) Lindberg*Weissia viridula* Hedwig*glauca* Bartram = *Weissia ligulifolia* (Bartram) Grout*ligulifolia* (Bartram) Grout [Ireland et al. 1981; Stark & Castetter 1982]*Weissia andersoniana* Zander*Weissia glauca* Bartram*muhlenbergiana* (Swartz) W.D. Reese & B.A.E. Lemmon [Allred 2011]*phascopsis* Zander [Eckel 1986]*Astomum phascoides* (Drummond) Grout [not *Weissia phascoides* (Wilson) Müller Hal.]*planifolia* Dixon = *Trichostomum planifolium* (Dixon) R.H. Zander*recurvirostra* Hedwig = *Bryoerythrophyllum recurvirostrum* (Hedwig) Chen*swettii* Bartram = *Trichostomum planifolium* (Dixon) R.H. Zander*tenuirostris* Hooker & Taylor = *Trichostomum tenuirostre* (Hooker & Taylor) Lindberg*tortilis* (Schwägrichen) Müller Hal. = *Weissia condensa* (Voit.) Lindberg  
*verticillata* Bridel = *Eucladium verticillatum* (Bridel) Bruch & Schimper*viridula* Hedwig = *Weissia controversa* Hedwig**Family PTYCHOMITRIACEAE****Ptychomitrium***serratum* Bruch & Schimper [Worthington 2011]*sinense* (Mitten) A. Jaeger [Ireland et al. 1984; Reese 1998]*Ptychomitrium leibergii* Best*leibergii* Best = *Ptychomitrium sinense* (Mitten) A. Jaeger**Family RHYTIDIACEAE****Rhytidium***rugosum* (Hedwig) Kindberg [Bartram 1931; Mahler 1978]**Family SELIGERIAACEAE***Blindia acuta* (Hedwig) Bruch & Schimper : Allred 9880 was identified as this, but the specimen is corrected to *Hymenostylium recurvirostrum* (Hedwig) Dixon**Family SPHAGNACEAE****Sphagnum***fimbriatum* Wilson [Coop 2002]*girgensohnii* Russow [Romig & Allred 2013]**Family SPLACHNACEAE****Tayloria***acuminata* Hornschuch [Crum & Anderson 1981]**Family STEREOPHYLLACEAE****Stereophyllum***radiculosum* (Hooker) Mitten [Grout 1945; Mahler 1978]**Family TETRAPHIDACEAE****Tetraphis***pellucida* Hedwig [Allred et al. 1998]**Family THUIDIACEAE****Abietinella***abietina* (Hedwig) Fleischer [Bartram 1931; Mahler 1978]*Thuidium abietinum* (Hedwig) Schimper**Thuidium***abietinum* (Hedwig) Schimper = *Abietinella abietina* (Hedwig) Fleischer  
*delicatulum* (Hedwig) Schimper var. *radicans* (Kindberg) Crum et al. [Bartram 1931; Mahler 1978]*Thuidium philibertii* Limpricht*philibertii* Limpricht = *Thuidium delicatulum* (Hedwig) Schimper var. *radicans* (Kindberg) Crum et al.**Family TIMMIACEAE****Timmia***austriaca* Hedwig [Bartram 1931; Mahler 1978]*bavarica* Hessler = *Timmia megapolitana* Hedwig var. *bavarica* (Hessler) Bridel*megapolitana* Hedwig var. *bavarica* (Hessler) Bridel [Mahler 1978]  
*Timmia bavarica* Hessler**REFERENCES**

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Submissions will be reviewed by the editor, who may ask

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- Kelly Allred, editor

**Botany is the natural science that transmits the knowledge of plants.**

— Linnaeus

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## A Review of *Carex* in New Mexico: Initial Findings

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During January 8-10, 2014 four botanists convened at the University of New Mexico Herbarium (UNM) to review New Mexico plant specimens in the genus *Carex*. The purpose of the review was 1) to annotate misidentified specimens, and 2) to clarify the status of *Carex* species known to occur in the state of New Mexico. This initial 3-day event launched formation of the Southwest *Carex* Working Group (SWCWG).

### SOUTHWEST *CAREX* WORKING GROUP (SWCWG)

The four authors of this paper are all experienced botanists with diverse backgrounds who have over the years developed a particular interest in sedge species in the genus *Carex* while working in states other than New Mexico. James ("Jim") McGrath has been studying *Carex* species since his days mapping wetlands in Yellowstone National Park in the mid 1990's. McGrath has specialized in wetlands and has discovered and documented the existence of six *Carex* species previously unrecorded in New Mexico, originally reported under Plant Distribution Reports in The New Mexico Botanist newsletter, and later included in the Flora Neomexicana series (Allred 2012). In 2013 he co-presented (with Bill Norris and Russell Kleinman) a *Carex* identification workshop in New Mexico sponsored by the Native Plant Society of New Mexico. Glenn Rink and Max Licher are based at the Deaver Herbarium at Northern Arizona University in Flagstaff. They have studied *Carex* extensively in Arizona and neighboring states. Their studies have included reviewing the *Carex* collections in 20 herbaria and examining nearly 6,000 *Carex* specimens during the past four years. The culmination of their

efforts has resulted in a document entitled "*Carex* of Arizona" (Rink and Licher 2015 – currently submitted for publication). This document includes a key to Arizona *Carex* species, full descriptions of each species and discussions of various taxonomic, identification, ecological, and habitat issues pertaining to these species. William R. ("Bill") Norris has studied *Carex* extensively in Iowa, where he has annotated more than 12,000 *Carex* specimens, prepared an unpublished dichotomous key to Iowa's 120 *Carex* taxa, and co-presented six *Carex* identification workshops. Norris is currently a biology professor at Western New Mexico University in Silver City. He is the author of the *Carex* key in Flora Neomexicana III (Allred & Ivey 2012), a manual dedicated to the identification of New Mexico flora.

Botanist Charles ("Chick") Keller is also a member of SWCWG, but he has not been as deeply involved in specimen annotation. Like McGrath, Keller discovered several *Carex* species previously unrecorded in the state of New Mexico and he published these in The New Mexico Botanist under Plant Distribution Reports. Keller is the founder of and primary contributor to the Jemez Mountain Herbarium in Los Alamos, New Mexico.

### NEW MEXICO SPECIMENS REVIEWED AND ANNOTATED AT SIX REGIONAL HERBARIA

Our 3-day event at the UNM herbarium was just the beginning of our review of New Mexico *Carex*. During 2014 through January 2015, New Mexico *Carex* specimens deposited in the Biology Herbarium (NMC) and the Range Science Herbarium (NMCR) at New Mexico State

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University, and at the University of Texas at El Paso Herbarium (UTEP), were reviewed and annotated by Licher, Rink and Norris. All four of us reviewed and annotated New Mexico *Carex* specimens at San Juan College (SJNM) in Farmington, New Mexico in early January 2015. Licher and Rink reviewed a similar collection at the Brigham Young University Herbarium (BRY) in Provo, Utah. Licher and McGrath extended our study of New Mexico *Carex* to the field by making the first Southwest *Carex* Working Group's sedge collecting trip to the Vermejo Park Ranch in Taos County about 25 miles northeast of Questa, New Mexico in late July 2014.

### ANNOTATIONS – RULE OF THREE

During our review of UNM, NMC and SJNM specimens, we adopted a Rule of Three regarding the annotation of specimens. That is, we affix an annotation label listing our four names to a given specimen sheet if three of us agree on a determination. We decided that if three of us agreed on a determination, then confirmation by a fourth reviewer was unnecessary. This procedure evolved because sometimes it was logistically difficult for all four of us to review every single specimen.

### GOALS

It is our intent to improve the understanding of the large and complex genus *Carex*, which is the second most diverse genus (after *Astragalus*) in the New Mexico vascular plant flora. It is our intention that this paper will be the first of a series of publications focused on New Mexico *Carex* taxa. In this paper we first summarize our findings during reviews of the UNM, NMC and SJNM collections based on databases that we developed for those collections. Secondly, we identify and discuss additions, deletions and nomenclature upgrades to the New Mexico flora based on our review of all of the above-described herbaria. In this discussion, we clarify the status of several *Carex* taxa previously thought to exist in New Mexico, but for which verification of their existence in this state is needed.

Future publications will focus on specific sections of genus *Carex* as described in Volume 23 of Flora of North America (Ball and Reznicek 2002). Each publication will focus on a particular section or sections of genus *Carex*. By focusing on a few closely related species we can highlight the morphological, ecological and habitat characteristics that distinguish these species from one another as well as from other species of *Carex*.

### REVIEW OF UNM, NMC, AND SJNM COLLECTIONS – A SUMMARY

#### UNM

We annotated 714 specimens at UNM representing 48 *Carex* taxa. In this process, we determined 26 specimens (3.6%) for which there was no specific epithet. Furthermore, we annotated 17 specimens as *Carex* sp. because of their immature and/or fragmentary condition that precluded their accurate determination to species level. Among these 17

specimens were 15 that we downgraded from a previous species determination. We determined that 51 of 671 specimens (7.6%) which had a previous determination were misidentified. An additional 27 specimens are currently under review by Norris and eight highly questionable specimens were sent to North American *Carex* expert Anton A. Reznicek (University of Michigan) for determination. The most commonly misidentified specimens were *Carex emoryi*, *C. nebrascensis*, *C. petasata*, *C. praegracilis* and *C. siccata*.

Finally, we set aside for later review all UNM specimens representing taxa in *Carex* section *Acrocystis* (i.e., *Carex geophila*, *C. inops* subsp. *heliophila*, *C. pityophila*, *C. rossii*) and many specimens in *Carex* section *Ovales* because they were too difficult for us to confidently determine in a short time period.

#### NMC

The Southwest *Carex* Working Group reviewed all 159 *Carex* specimens in the NMC collection. We upgraded the nomenclature of 24 specimens (15.1 %), and corrected the identification of 39 (24.5%) misidentified specimens. The most commonly misidentified species were *Carex inops* subsp. *heliophila*, *C. occidentalis*, *C. praegracilis*, and *C. wootonii*. We could not reach consensus on determinations of 11 specimens due to immature or poor quality specimens or to taxa that are not clearly defined. Nor could we reach agreement on the identity of two additional specimens, which will be sent to A.A. Reznicek for determination.

#### SJNM

We annotated 166 *Carex* specimens representing 40 taxa during our review of the *Carex* collection in the San Juan College Herbarium. We provided nomenclature upgrades for eight (4.8%) specimens and we decided that two specimens were not identifiable and annotated them as *Carex* sp. We determined that 63 of the remaining 164 specimens (38.4%) were misidentified. The most commonly misidentified species were *C. microptera*, *C. occidentalis* and *C. siccata*. Less commonly misidentified taxa included *C. bella*, *C. douglasii*, *C. duriuscula*, *C. inops* subsp. *heliophila* and *C. praegracilis*.

### ADDITIONS AND DELETIONS TO THE NEW MEXICO FLORA

#### *Carex kelloggii* W. Boott – Nomenclatural Upgrade

A recent publication by Dragon and Barrington (2009) recognized *Carex lenticularis* Michaux var. *lipocarpa* (Holm) L. Standley as *Carex kelloggii* W. Boott. We have accepted this nomenclatural change. Dragon and Barrington (2009) recognized other varieties of *Carex lenticularis*, but we have encountered none of these in our review of *Carex* collections in New Mexico. The treatment of *Carex* Section *Phacocystis* by Standley et al. (2002) reports that the other varieties of *C. lenticularis* occur in geographic regions (Pacific northwest, Pacific coast states, northern U.S and Canada) far distant from New Mexico.

A collections search on SEINet (2014), an on-line searchable database of plant specimens housed in more than

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100 herbaria mostly in the southwestern United States, revealed only eight *Carex kelloggii* specimens collected in New Mexico. Our review of UNM specimens revealed several specimens identified as what we now recognize as *C. kelloggii* to be other members of section *Phacocystis*, especially *C. aquatilis* Wahlenberg var. *aquatilis*, *C. nebrascensis* Dewey and *C. emoryi* Dewey. *Carex kelloggii* is cespitose, whereas the latter two species are long-rhizomatous. *C. kelloggii* normally has only one staminate spike, while *C. aquatilis* var. *aquatilis* and *C. emoryi* typically have more than one staminate spike (Rink and Licher 2015; Standley et al. 2002).

***Carex aureolensis* Steudel (Verified as part of the New Mexico flora) and  
*Carex frankii* Kunth (Dropped from the New Mexico flora)**

Several sedge specimens originally determined as *Carex frankii* Kunth and collected in New Mexico are housed in five western herbaria (UNM, NMC, BRY, UTEP and UCR – University of California, Riverside). All of these specimens have been reviewed by us except for two deposited at UCR. However, the UCR specimens are duplicates of specimens that we reviewed at other herbaria. Based on our review of these specimens we conclude that all New Mexico specimens originally determined as *Carex frankii* Kunth are, in fact, *Carex anreolensis* Steudel. Hence, we conclude that *Carex frankii* Kunth does not exist in New Mexico. Our conclusion is consistent with the treatment of *Carex* section *Squarrosae* by Ford and Reznicek (2002), who present the distribution of *C. frankii* as extending no further west than Oklahoma, Kansas and Nebraska and who show the distribution of *C. anreolensis* to include the state of New Mexico. Allred (2012) has recognized *C. anreolensis* as part of the New Mexico flora, citing Ball and Reznicek (2002), which includes Ford and Reznicek (2002).

Ford and Reznicek (2002) provided characteristics that distinguish *C. anreolensis* from *C. frankii*. *Carex anreolensis* is long-rhizomatous, while in contrast *C. frankii* is cespitose and short-rhizomatous. *C. anreolensis* is also distinguished from *C. frankii* by slightly wider and translucent pistillate scale bodies (0.4-0.9 mm wide compared to 0.1-0.4 mm wide) and wider staminate scales. According to a SEINet (2014) collections search and a review of UTEP *Carex* collections, *C. anreolensis* has been found only at a few springs in southern New Mexico: Sitting Bull Falls in the Guadalupe Mountains, Oak Springs in Carlsbad Caverns National Park, both in Eddy County, and at a spring in the Florida Mountains of Luna County.

***Carex stricta* Lamarck – Dropped from the New Mexico Flora**

In their treatment of *Carex* section *Phacocystis* in Flora of North America vol. 23, Standley et al. (2002) indicated at the end of their description of *Carex senta* Boott that “Collections from New Mexico identified as *C. senta* are *C. stricta*.” They, therefore, exclude New Mexico from the geographical range of *Carex senta* Boott. However, in this same publication they contradict the above statement by excluding New Mexico

from the geographic range for *Carex stricta*. Since the above publication, Norris (2012a) verified the existence of *C. senta* in New Mexico based on a specimen collected in Grant County with determination verified by A.A. Reznicek. Later, Norris (2012b) reported that *Carex senta* is “typically encountered and fairly common along high energy streams and rivers in the Gila National Forest...”

The presence of *C. stricta* in New Mexico has been an unanswered question since the publication of Flora of North America Vol. 23 in 2002. Norris (2012b) included *C. stricta* in his treatment of New Mexico *Carex*, basing his decision on an on-line collections search (SEINet, accessed late 2011) that revealed specimens determined as *C. stricta* were “collected in northern (border of small pond, Mora; in canyon, Union) and southwestern (sandy gravel bar, Catron) counties in New Mexico.” However, one or more members of SWCWG has reviewed *Carex* specimens collected in New Mexico at UNM, NMC, NMCR, SNM (Dale A. Zimmerman Herbarium at Western New Mexico University), UTEP and BRY herbaria. We have found no specimens identified as *C. stricta* nor any specimens of *C. stricta* misidentified as other taxa. Furthermore, a collections search on SEINet (2014) failed to reveal any *C. stricta* specimens collected in New Mexico. In fact, SEINet revealed only two *C. stricta* specimens collected in the entire state of Texas. An examination of the distribution of *C. stricta* on maps found on The PLANTS Database (USDA, NRCS 2014) indicated that *C. stricta* is known no further west than central Texas and western Kansas. *C. stricta* is apparently unrecorded in Oklahoma (Standley et al. 2002; USDA, NRCS 2014). Standley et al. (2002) reported that *C. stricta* may be “the most common wetland sedge in eastern North America,” but it is apparently very uncommon to absent in the southern U.S.

McGrath searched the New Mexico Biodiversity Collections Consortium website (NMBCC 2007) in late December 2014 and found records of seven *C. stricta* specimens that matched the habitat and location information described by Norris (2012b) in his treatment of New Mexico *Carex*. However, a search of the determination history of these specimens revealed that five of them had subsequently been annotated to *C. aquatilis* in 1998 by Miriam Fritts and we agreed with the Fritts determinations during our early 2014 review of UNM *Carex* specimens. We annotated the other two such *C. stricta* specimens to *C. emoryi* and *C. lenticularis* var. *lipocarpa* (*C. kelloggii*) during our review of NMC specimens in early 2014.

Based on the above evidence, we conclude that *Carex stricta* does not now exist nor has it ever existed in New Mexico. We base our conclusion on 1) no evidence of specimens documenting the existence of this species in New Mexico, 2) an apparent error by Standley et al. (2002) resulting in contradictory information regarding the distribution of *C. stricta* in New Mexico, and 3) the likelihood that New Mexico is substantially outside the range of *C. stricta*.

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***Carex buxbaumii* Wahlenberg, *Carex magellanica* Lamarck subsp. *irrigua* (Wahlenberg) Hiitonen, and *Carex saxatilis* Linnaeus – Additions to the New Mexico Flora**

Specimens of all three of these taxa were collected by Keller, Roy Greiner and McGrath in the San Pedro Parks Wilderness in Rio Arriba County, New Mexico in mid-August, 2012. The identities of the *Carex buxbaumii* Wahlenberg, *Carex magellanica* Lamarck subsp. *irrigua* (Wahlenberg) Hiitonen, and *Carex saxatilis* Linnaeus specimens were confirmed by Norris and the identities of the *C. buxbaumii* and *C. saxatilis* specimens were also confirmed by Reznicek. All three taxa are represented in the key to New Mexico *Carex* developed by Norris (2012b) because they are among more than 20 *Carex* taxa that have been collected in adjacent counties in Arizona, Utah and/or Colorado, implying that they might occur in New Mexico.

Chick Keller has for several years hypothesized that the flora of the San Pedro Parks Wilderness is a relict left over from the Ice Age. The San Pedro Parks Wilderness is at approximately 10,000 feet elevation and contains numerous springs and associated wetlands. In addition, two UNM specimens collected from what we now recognize as the San Pedro Parks Wilderness in the mid 1960's have been verified by Reznicek as *Carex macloviana* d'Urville. The recent documentation of *C. macloviana*, *C. magellanica* subsp. *irrigua* and *C. saxatilis* at high elevation sites in the San Pedro Parks Wilderness supports Keller's hypothesis because the range of each is centered in Colorado and states further north (Ball and Reznicek 2002).

An additional specimen most recently determined as *Carex* sp. by Julian Starr was annotated to *Carex saxatilis* Linnaeus by SWCWG in 2014. Paula Durkin collected this specimen on September 7, 1997 at Glacier Lakes on the Vermejo Park Ranch in northern New Mexico. Licher and McGrath attempted to return in late July 2014 to the Glacier Lakes to collect and photograph *C. saxatilis* and *C. limosa* Linnaeus. Durkin, now a wetland specialist with the Colorado Department of Transportation, graciously provided an aerial photo showing the sampling sites where she thought she made collections on behalf of the New Mexico Natural Heritage Program in the UNM Biology Department. The sampling sites are approximately 500 feet south of the New Mexico-Colorado state line. During their July 2014 visit to Glacier Lakes, Licher and McGrath failed to re-locate *C. saxatilis* at either of the two presumed sampling sites or in two wetlands on the Colorado side of the Glacier lakes area. It may have been too early to find this species in suitable collecting condition given that Durkin's specimen was collected about six weeks later in the growing season than our visit.

We found a record of another *Carex saxatilis* specimen supposedly collected in New Mexico during a SEINet Collections Search (SEINet 2015). However, Cortez, Colorado botanist Marian Rohman, the collector of this specimen (SJNM catalog # 63928, Marian Rohman 3473, San Juan College Herbarium), has reported (personal communication 2015) that the locality information for this specimen reported on SEINet is incorrect, and that the specimen was, in fact,

collected in the San Juan Mountains of Colorado.

Details of the collected specimens as well as the annotated 1997 specimen follow:

***Carex magellanica* Lamarck subsp. *irrigua* (Wahlenberg) Hiitonen** (*Cyperaceae*, boreal bog sedge): Rio Arriba County: San Pedro Parks Wilderness, Santa Fe National Forest, Vega del Oso; very seepy wetland in heavily grazed meadow with *Eleocharis*; sec 26, T22N, R1E, 36.10872, -106.80833 (datum: NAD 27 CONUS), 10,420 feet, 16 August 2012, J. McGrath 1199 (UNM). Verified by SWCWG. [first report for New Mexico].

***Carex buxbaumii* Wahlenberg** (*Cyperaceae*, Buxbaum's sedge): Rio Arriba County: San Pedro Parks Wilderness, Santa Fe National Forest, Rio de Las Vacas, near trail. 36.105556, -106.823611, sec 27, T22N, R1E, 10,350 feet, 17 August 2012. C. Keller & R. Greiner 03530h (Jemez Mountain Herbarium). Verified by W. R. Norris and A.A. Reznicek. [first report for New Mexico]

***Carex saxatilis* Linnaeus** (*Cyperaceae*, rock sedge): Rio Arriba County: San Pedro Parks Wilderness, Santa Fe National Forest, Rio de Las Vacas, streamside near trail. 36.105556, -106.823611, sec 27, T22N, R1E, 10,300 feet, 17 August 2012. C. Keller & R. Greiner 03529h (Jemez Mountain Herbarium). Verified by W.R. Norris and A.A. Reznicek [first report for New Mexico].

***Carex saxatilis* Linnaeus** (*Cyperaceae*, rock sedge): Taos County: Vermejo Park Ranch, Glacier Lakes; fine sandy loam, fen, *Carex limosa*-*Eleocharis quinqueflora* herbaceous vegetation. Associated species: *Carex aquatilis*, *Carex limosa*, *Eleocharis quinqueflora*. 11,560 feet, 7 September 1997. P. Durkin 97MB024-G5 (UNM). Determination by SWCWG. [first report for New Mexico].

**The *Carex tetrastachya* – *Carex crus-corvi* Conundrum**

Our 2014 review of 159 *Carex* specimens at the New Mexico State University Herbarium (NMC) revealed specimens of two *Carex* species for which there are no other records in the state of New Mexico. These are *Carex tetrastachya* Scheele and *Carex crus-corvi* Shuttleworth. Label data for specimens of both species indicate that these sedges were collected from Bosque del Apache National Wildlife Refuge, Socorro County, in central New Mexico. *Carex tetrastachya* has been recognized as part of the New Mexico flora since Miriam Fritts annotated the specimen to this species in 1998. During our 2014 review of NMC *Carex* specimens, we annotated a specimen identified as *Carex stipata* Muhlenberg ex Willdenow var. *maxima* Chapman to *C. crus-corvi* Shuttleworth (subsequently verified by Reznicek). However, closer examination of the two specimen labels raises considerable doubt about the authenticity of these two collections.

As it turns out, NMC also contains two additional specimens representing these same two species, but which

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were collected by apparently the same collector (at least two of the four specimens) at “Hageman Refuge” near Denison, Texas. “Hageman Refuge” is Hagerman National Wildlife Refuge, which is located about 75 miles north of Dallas, Texas. The information on the labels of the four specimens is minimal and sometimes incomplete.

The detailed information on the four specimens follows, but we will first discuss the *Carex tetrastachya* specimens.

### *Carex tetrastachya* Specimens

Unknown collector 153. No date of collection. Bosque del Apache NWR, Socorro County, San Antonio, NM. NMC catalog # 42333. Original determination *Carex brittoniana* Bailey by F. J. Hermon. Determined as *Carex tetrastachya* Schule (*C. brittoniana* L.H. Bailey) by M.C. Fritts in 1998 and by A.A. Reznicek in 2012. Determined *Carex tetrastachya* Scheele by SWCWG in 2014.

F.J. Herman 153. 03 May 1955. Hageman Refuge, Grayson County, Denison, TX. NMC catalog # 39572. Original determination *Carex brittoniana* Bailey. Annotated to *C. tetrastachya* Schule (*C. brittoniana*) by M.C. Fritts in 1998. Annotated to *Carex tetrastachya* Scheele by J. McGrath Jan 2015 and by other members of SWCWG via examination of digital images of the specimen.

Note that the New Mexico *C. tetrastachya* specimen label does not provide the collector or date of collection. However, the Texas specimen label has the same collector number as the New Mexico specimen. This coincidence suggests that F.J. Herman was the unknown collector and that the collection date for the New Mexico specimen was sometime in 1955. The coincidence of the collector number and the incomplete label information on the New Mexico specimen also raises doubt that the specimen was actually collected at Bosque del Apache National Wildlife Refuge. It is possible that the specimen was collected at Hagerman National Wildlife Refuge and that somehow during processing the specimen was mixed up with material collected from Bosque del Apache National Wildlife Refuge. A SEINet (2015) collections search revealed that the New Mexico specimen is the only such record of this species in New Mexico. According to a PLANTS database (USDA, NRCS, 2015) distribution map, *C. tetrastachya* is known no further west than west central Texas.

### *Carex crus-corvi* Specimens

F.J. Herman 157. No date of collection. Bosque del Apache National Wildlife Refuge, San Antonio, NM. NMC catalog # 41697. Original determination *Carex stipata* var. *maxima* Chapm. and annotated by M. C. Fritts in 1998 as *Carex stipata* Muhlenberg var. *maxima* Chapman. Determined as *Carex crus-corvi* Shuttleworth by SWCWG 2014 and verified by A.A. Reznicek via examination of digital images of the specimen in 2014.

Unknown collector. #151. 03 May 1955. Wet Place Hageman Refuge, Denison, TX. NMC catalog # 39573. Original determination *Carex stipata* var. *maxima* Chapman by F.J. Herman. Annotated to *Carex stipata* Muhlenberg var. *maxima* Chapman by M. C. Fritts in 1998. Determined as *Carex crus-corvi* Shuttleworth by McGrath in 2015 and by other members of SWCWG via examination of digital images of the specimen.

Note that, like the New Mexico *C. tetrastachya* specimen, the New Mexico *C. crus-corvi* specimen label lacks critical information, including the date of collection. Note also that the Texas *C. crus-corvi* specimen was collected in the same location and on the same date as the Texas *C. tetrastachya* specimen by presumably the same collector. However, the Texas *Carex tetrastachya* specimen lists F. J. Herman as the apparent collector, but the Texas *Carex crus-corvi* specimen specifically states “Det. By F. J. Herman.” The incomplete label of the New Mexico *C. crus-corvi* specimen again raises doubt that the specimen was actually collected at Bosque del Apache National Wildlife Refuge. The similarity of the collector's name “F.J. Herman” to that of F. J. Hermann, the author of “Manual of the Carices of the Rocky Mountains and Colorado Basin” (Hermann 1970) suggested that perhaps F. J. Hermann was the collector of these specimens. We consulted A. A. Reznicek of the University of Michigan Herbarium (where Hermann's field notes are housed), who informed us that F. J. Hermann collected specimens 153 and 157 in 1926 in Ann Arbor, Michigan. Reznicek speculated that perhaps F.J. Hermann determined the identity of the subject specimens collected by someone else, and that during the processing of the specimens he (Hermann) was incorrectly listed as the collector of these plants, with his name misspelled. A PLANTS Database distribution map reveals that *C. crus-corvi* is not known further west of east central Texas (USDA, NRCS, 2015).

Based on the poor label information, the confusion surrounding the identity of the collector, the absence of additional specimens and the fact that the New Mexico specimens of both *C. tetrastachya* and *C. crus-corvi* are from a locality substantially outside the normal range of both species, we conclude that their presence in New Mexico is highly doubtful both at present and in the past. We conclude that *Carex tetrastachya* Scheele should be dropped from and *Carex crus-corvi* Shuttleworth should not be added to the New Mexico flora pending verification of their existence in New Mexico.

[Footnote: *Carex stipata* Muhlenberg ex Willdenow var. *maxima* Chapman ex Boott, the original determination for the two *Carex crus-corvi* specimens described above, has never been recognized as part of the New Mexico flora (Allred 2012; Allred and Ivey 2012; Martin and Hutchins 1980, Wootton and Standley 1915). The distribution of this taxon was recognized no further west than Alabama by Standley (2002). A SEINet (2015) collections search revealed no other specimens of this taxon west of the Carolinas and Florida.]

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## VERIFICATION OF TAXA IN THE NEW MEXICO FLORA

### *Carex petasata* Dewey

*Carex petasata* Dewey has been a source of confusion in New Mexico. Allred (2012) and Norris (2012b) indicate this species as part of the New Mexico flora. At the same time Allred (2012) states that "In naming *Carex wootonii*, Mackenzie (1915) argued that his new *Carex wootonii* replaced what had been called *Carex petasata* in NM; merits verification." Mastroggiuseppe et al. (2002) in Volume 23 of Flora of North America do not include New Mexico as part of the range of distribution for *Carex petasata*.

Our review of the collections at UNM and NMC revealed that only two out of 12 *C. petasata* specimens were previously identified correctly as *C. petasata*. Our ability to accurately identify *C. petasata* derives from Licher and Rink's extensive study (herbarium specimens and in the field) of *C. petasata* and the very similar *Carex wootonii* in Arizona.

Both of these species are in Section *Ovales*, which is characterized by gynaeandrous spikes and winged perigynia (Ball and Reznicek 2002). Both species have large perigynia (more than 5.5 mm long), have ovoid or obovoid to fusiform-shaped spikes and occur in mountain meadows and clearings within forests (Rink and Licher 2015). However, these two species each also occur in other, non-overlapping habitats: *C. petasata* in non-montane grasslands (Mastroggiuseppe et al. 2002) and *C. wootonii* in forests. The distribution of *C. wootonii* includes southeastern and east central Arizona and adjacent southwestern and west central New Mexico. However, *C. wootonii* has been found as far north as the Kaibab Plateau in Arizona (Rink and Licher 2015) and the Valles Caldera National Preserve in New Mexico, but it is unknown in Utah (SEINet 2015). During our review of SJNM specimens in January 2015, we annotated a specimen collected in Colorado as *C. wootonii* – a state record, since SEINet (2015) reveals no other *C. wootonii* specimens collected in that state. *C. petasata* occurs in northern Arizona and northern New Mexico and ranges as far north as Alaska (SEINet 2015; Mastroggiuseppe et al. 2002). The general region of overlap between the distributions of *C. wootonii* and *C. petasata* is east central Arizona and west central New Mexico and the northern portions of both states for as far north as the range of *C. wootonii* extends. In New Mexico both species are known to occur in the Valles Caldera National Preserve and the area around Mount Taylor (SEINet 2015).

Key differences between the two species as derived from Rink and Licher (2015) are described below:

<i>Carex petasata</i>	<i>Carex wootonii</i>
Perigynia light olive green, contrasting less with tan pistillate scales	Perigynia forest green, contrasting sharply with brown pistillate scales
Perigynia usually with evident nerves	Perigynia usually nerveless
Hyaline margins on pistillate scales 0.2-0.8 mm wide	Hyaline margins on pistillate scales 0-0.4 mm wide
Spikes narrowly fusiform to narrowly obovoid with many staminate flowers at base of each spike	Spikes broadly fusiform to ovoid with few staminate flowers at the base of each spike
Lowest inflorescence bract never longer than inflorescence	Lowest inflorescence bract sometimes longer than inflorescence

Near the conclusion of Licher and McGrath's sedge collecting trip to the Vermejo Park Ranch in July 2014, Licher indicated he wanted to walk up a grassy valley east of the broad Costilla Creek valley. He thought he might find *Carex petasata* because the valley was the right habitat. McGrath did not accompany Licher, but several days later Licher reported that he found *C. petasata* at about 9,650 feet elevation in that grassy valley.

### *Carex macloviana* d'Urville

McGrath (2003) reported finding *Carex macloviana* d'Urville at timberline on the eastern shore of the uppermost lake of the Latir Lakes, Taos County, New Mexico. However, this single specimen collected by McGrath was determined by Reznicek and is housed in the University of Michigan Herbarium (MICH).

Following our review of UNM specimens, Reznicek further verified the existence of *C. macloviana* as part of the New Mexico flora by annotating two UNM specimens as *Carex macloviana* d'Urville. These specimens were originally collected in the San Pedro Parks Wilderness by Annehara Fleck in the mid-1960's. These specimens are as follows:

Rio Arriba County: San Pedro Cabin. [36 deg. 6 ' 59" N, 106 deg. 49' 24" W, ca 3150 m – hand written in pencil] (10,335 feet). 11 July 1964. A. Fleck s.n. (UNM). Determined *C. macloviana* by A. A. Reznicek 2015. Originally determined *C. festivella* Mackenzie presumably by collector in 1964, det. *C. microptera* Mackenzie by M.C. Fritts 1998, det. *C. macloviana* d'Urville by A. Hipp 2012.

Rio Arriba County: San Gregorio. 19 September 1964. A. Fleck s.n. (UNM). Determined *C. macloviana* by A. A. Reznicek 2015. Originally determined *C. festivella* Mackenzie presumably by collector in 1964, det. *C. macloviana* d'Urville by M.C. Fritts 1998, det. *C. macloviana* d'Urville by A. Hipp 2012.

Presumably, Fleck's collection of *C. macloviana* at San Gregorio refers to San Gregorio Reservoir in the San Pedro Parks Wilderness.

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### CURRENT STATUS OF NEW MEXICO CAREX

With this report we add three new *Carex* taxa to the New Mexico flora: *C. buxbaumii* Wahl., *C. magellanica* Lam. subsp. *irrigua* (Wahlenberg) Hiitonen, and *C. saxatilis* Linnaeus. We also verify the existence of *Carex aureolensis* Steudel, *C. macloviana* d'Urville and *C. petasata* Dewey in the New Mexico flora. We provide evidence to drop three species from the New Mexico flora: *Carex frankii* Kunth, *C. stricta* Lamarek, and *C. tetrastachya* Scheele. In the case of *C. tetrastachya*, poor labeling of a single specimen collected substantially outside its normal range of distribution precludes it from being considered part of the New Mexico flora. Similarly, a single poorly labeled specimen of *Carex cruscovi* Shuttleworth also collected well outside its normal range of distribution precludes its addition to the New Mexico flora at this time. Therefore, the existence of the latter two species in New Mexico must be verified beyond the above-mentioned poorly labeled specimens. Finally, we provide a nomenclatural upgrade for one species. *Carex lenticularis* Michaux var. *lipocarpa* (Holm) L. Standley is now recognized as *Carex kelloggii* W. Boott.

Based on the findings reported in this paper and the species reported in Allred (2012), there are apparently 92 *Carex* species documented in New Mexico. Additional field searches will very likely add more *Carex* species to the New Mexico flora. However, at least 10 species in the New Mexico flora are based on very few records, sometimes as few as a single specimen. In fact, we have encountered no records of specimens collected in New Mexico for one species, *Carex ultra* L.H. Bailey (recognized as such by Rink and Licher 2015, listed as *Carex spissa* L.H. Bailey in Allred 2012 and Allred and Ivey 2012). However, we have had an undocumented report of this species occurring in the Peloncillo Mountains of southwestern New Mexico (Richard Worthington - personal communication to McGrath in 2003). The few documented New Mexico records of some *Carex* species (e.g., *C. blanda* Dewey, *C. rosea* Schkuhr ex Willdenow, *C. leptalea* Wahlenberg, *C. garberi* Fernald) are substantially outside their normal range of distribution (Norris 2012b; USDA, NRCS 2015; SEINET, 2015). Additional field work and tracking down and examination of plant specimens will be necessary to determine whether these species actually exist within the state. Two other *Carex* species tentatively recorded from New Mexico (*Carex tenera* Dewey, *Carex taheensis* Smiley) do not match precisely the expected characteristics of these two species despite their determination by *Carex* expert A.A. Reznicek. Furthermore, one *Carex* species (*Carex pityophila* Mackenzie), currently included in the New Mexico flora (Allred 2012) and under current systematic study elsewhere, may be merged with another taxon in *Carex* section *Acrocystis* sometime in the future (Bruce Ford, University of Manitoba Herbarium, Derick Poindexter, University of North Carolina Herbarium - personal communication). We also suspect that *Carex chiluhahuensis* Mackenzie may eventually become subsumed into *Carex alma* L. H. Bailey, but more research is required to substantiate this

supposition.

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